

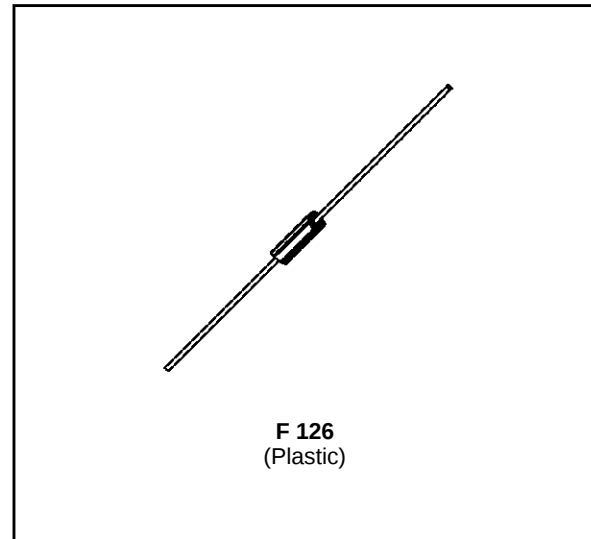
FAST RECOVERY RECTIFIER DIODES

FAST RECOVERY RECTIFIER

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

SUITABLE APPLICATION

- FREE WHEELING DIODE IN CONVERTERS AND MOTORS CIRCUITS
- RECTIFIER IN S.M.P.S.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	30	A
$I_F (AV)$	Average Forward Current*	$T_a = 70^\circ C$ $\delta = 0.5$	1	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	30	A
P	Power Dissipation*	$T_a = 70^\circ C$	1.33	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to +150 - 40 to + 150	$^\circ C$

Symbol	Parameter	BYT 01-			Unit
		200	300	400	
V_{RRM}	Repetitive Peak Reverse Voltage	200	300	400	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	220	330	440	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient*	60	$^\circ C/W$

* On infinite heatsink with 10mm lead length.

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	μA
	$T_J = 100^\circ\text{C}$				0.5	mA
V_F	$T_J = 25^\circ\text{C}$	$I_F = 1\text{A}$			1.5	V
	$T_J = 100^\circ\text{C}$				1.4	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions				Min.	Typ.	Max.	Unit
t_{rr}	$T_J = 25^\circ\text{C}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$	$V_R = 30\text{V}$			55	ns
	$T_J = 25^\circ\text{C}$	$I_F = 0.5\text{A}$	$I_R = 1\text{A}$	$I_{rr} = 0.25\text{A}$			25	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series inductance)

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$T_J = 100^\circ\text{C}$	$V_{CC} = 200\text{V}$ $I_F = 1\text{A}$		35	50	ns
I_{RM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$L_p \leq 0.05\text{ }\mu\text{H}$	See figure 12		1.5	2	A

To evaluate the conduction losses use the following equations:

$$V_F = 1.05 + 0.145 I_F$$

$$P = 1.05 \times I_{F(AV)} + 0.145 I_F^2(RMS)$$

Figure 1. Maximum average power dissipation versus average forward current.

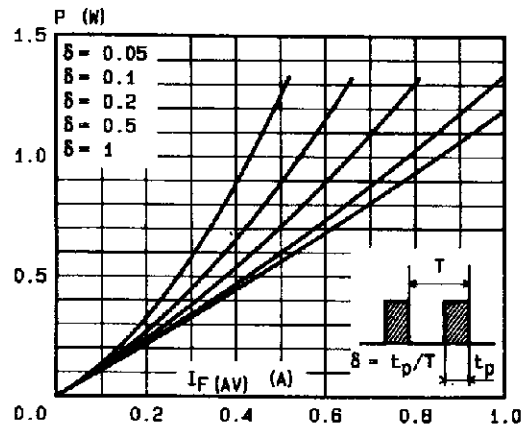


Figure 2. Average forward current versus ambient temperature.

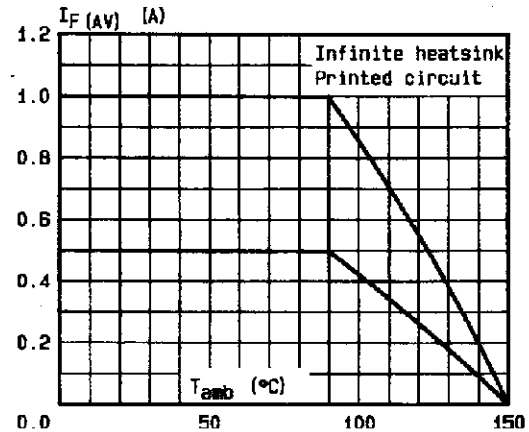
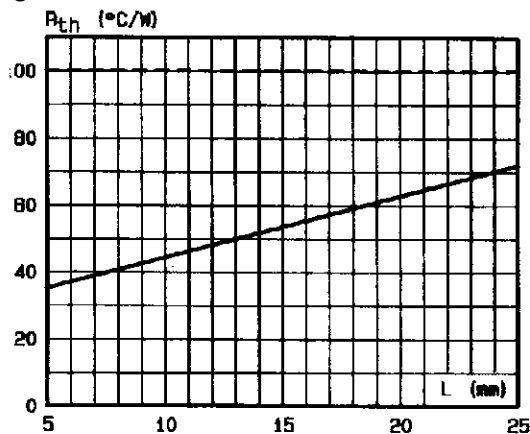


Figure 3. Thermal resistance versus lead length.


 Mounting n°1
INFINITE HEATSINK

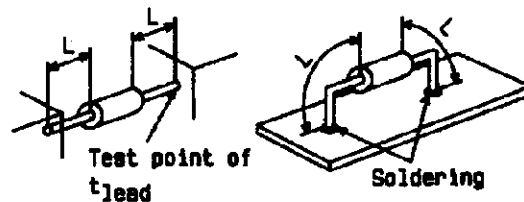
 Mounting n°2
PRINTED CIRCUIT


Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

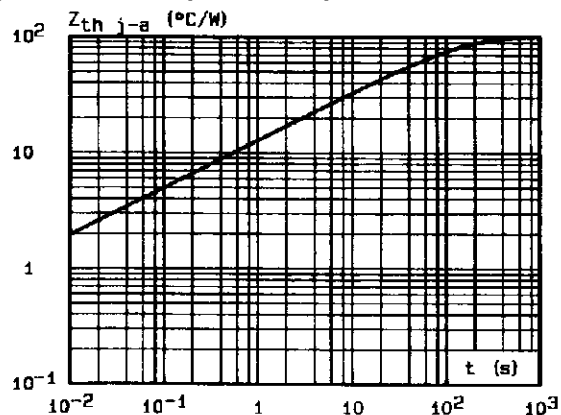


Figure 5. Peak forward current versus peak forward voltage drop (maximum values).

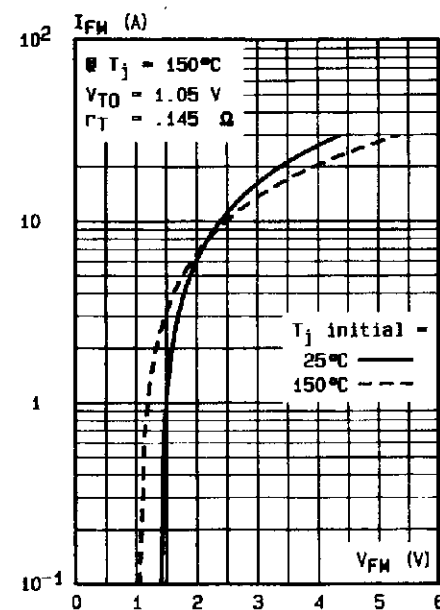


Figure 7. Recovery time versus di_F/dt .

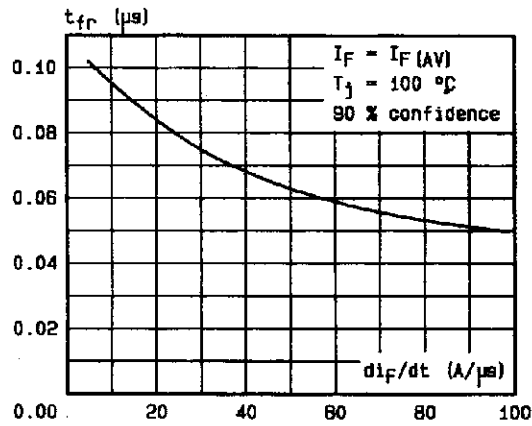


Figure 8. Peak forward voltage versus di_F/dt .

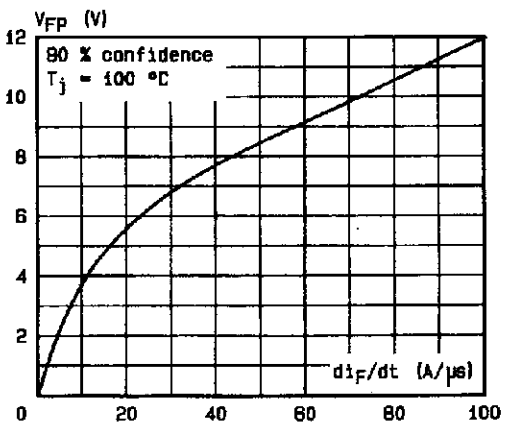


Figure 9. Peak reverse current versus di_F/dt .

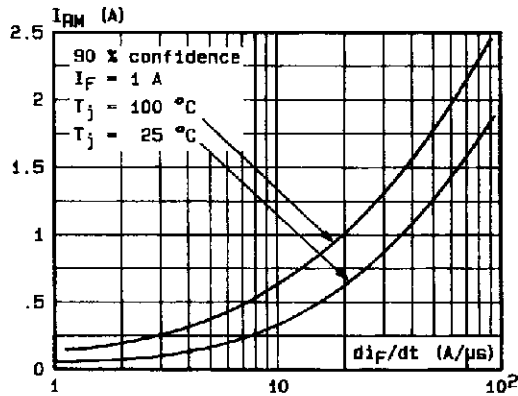


Figure 10. Recovered charge versus di_F/dt (typical values).

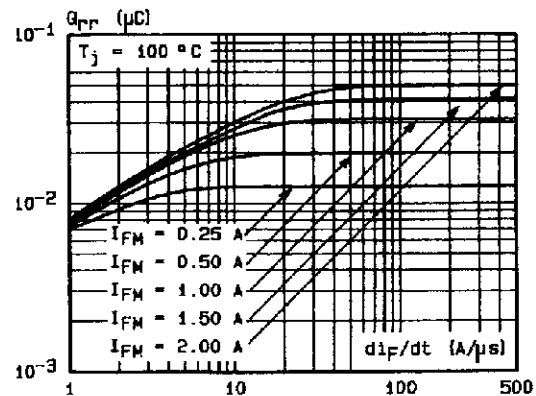


Figure 11. Dynamic parameters versus junction temperature.

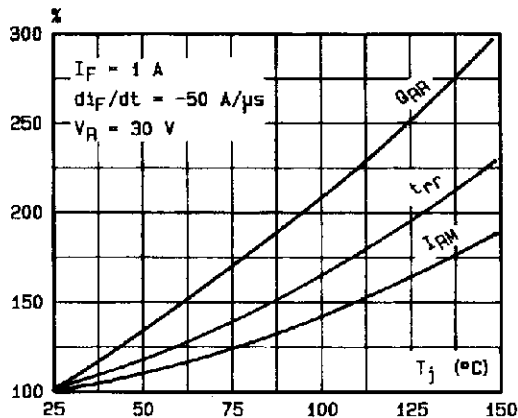
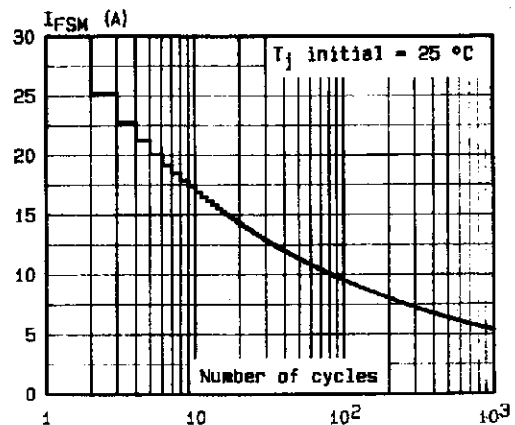
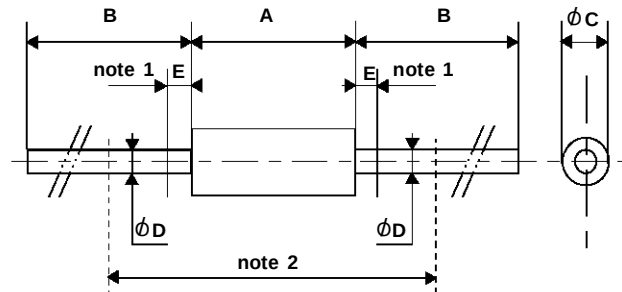


Figure 12. Non repetitive surge peak current versus number of cycles.



PACKAGE MECHANICAL DATA

F 126 (Plastic)



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A	6.05	6.35	0.238	0.250	1 - The lead diameter Ø D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59”(15 mm)
B	26		1.024		
Ø C	2.95	3.05	0.116	0.120	
Ø D	0.76	0.86	0.029	0.034	
E		1.27		0.050	

Cooling method: by convection (method A)

Marking: type number

Weight: 0.4g

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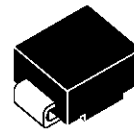
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- SURFACE MOUNT DEVICE

DESCRIPTION

Single high voltage rectifier ranging from 200V to 400 V suited for Switch Mode Power Supplies and other power converters.



SOD6
(Plastic)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	$T_I = 110^\circ\text{C}$ $\delta = 0.5$	1	A
I_{FSM}	Non repetitive surge peak forward current	$t_p = 10\text{ms}$ sinusoidal	30	A
T_{stg} T_j	Storage and junction temperature range		- 40 to + 150 - 40 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	SMBYT01-			Unit
		200	300	400	
V_{RRM}	Repetitive peak reverse voltage	200	300	400	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction-leads	25	$^\circ\text{C/W}$

SMBYT01

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$			1.5	V
	$T_j = 100^\circ\text{C}$				1.4	
I_R **	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	μA
	$T_j = 100^\circ\text{C}$				0.5	mA

Pulse test : * $t_p = 380\text{ }\mu\text{s}$, duty cycle < 2 %

** $t_p = 5\text{ ms}$, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{A}$ $I_{rr} = 0.25\text{A}$ $I_R = 1\text{A}$			25	ns
		$I_F = 1\text{A}$ $dI_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$			60	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$V_{CC} = 200\text{V}$ $T_j = 100^\circ\text{C}$	$I_F = 1\text{A}$ $L_p \leq 0.05\mu\text{H}$ $dI_F/dt = -50\text{A}/\mu\text{s}$		35	50	ns
I_{RM}				1.5	2	A

To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_{F(AV)} + 0.25 \times I_F^2_{(RMS)}$$

Voltage (V)	200	300	400
Marking	B2	B3	B4

Laser marking
Logo indicates cathode

Fig.1 : Low frequency power losses versus average current.

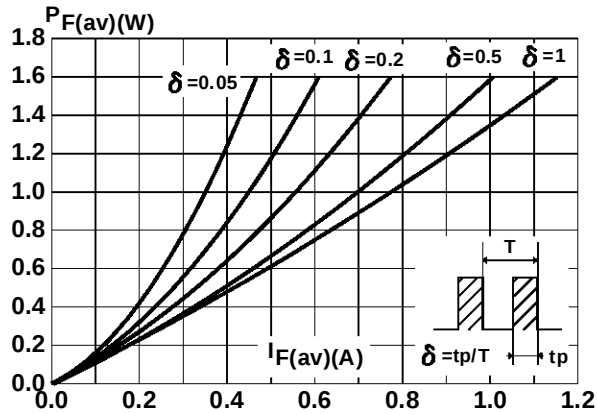


Fig.2 : Peak current versus form factor.

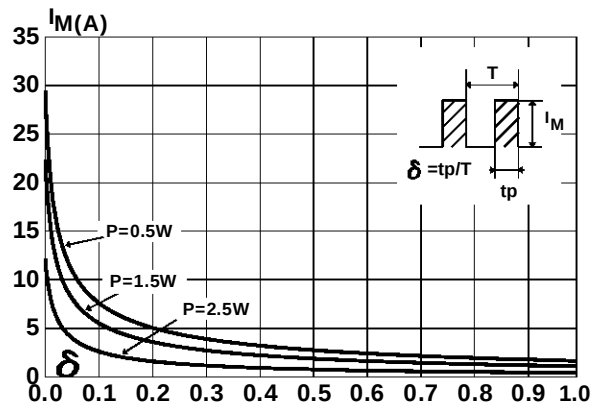


Fig.3 : Non repetitive surge peak forward current versus overload duration.

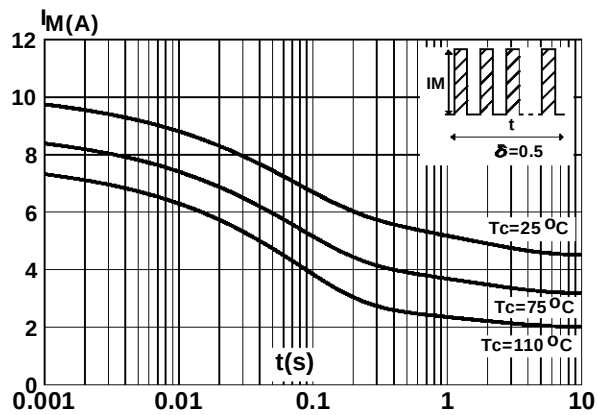


Fig.4 : Relative variation of thermal impedance junction to lead versus pulse duration.

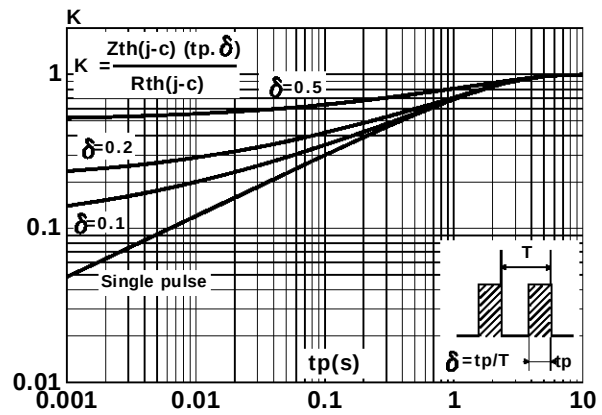


Fig.5 : Voltage drop versus forward current. (Maximum values)

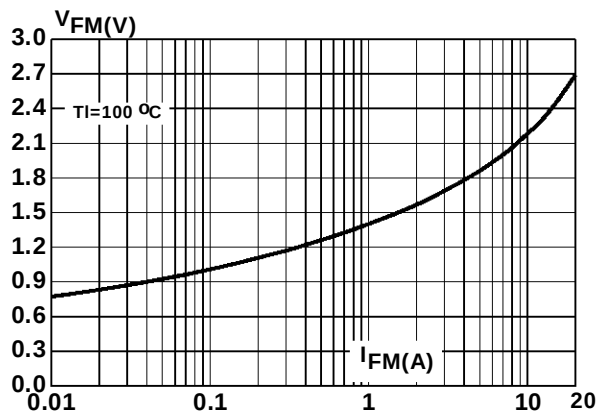


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)

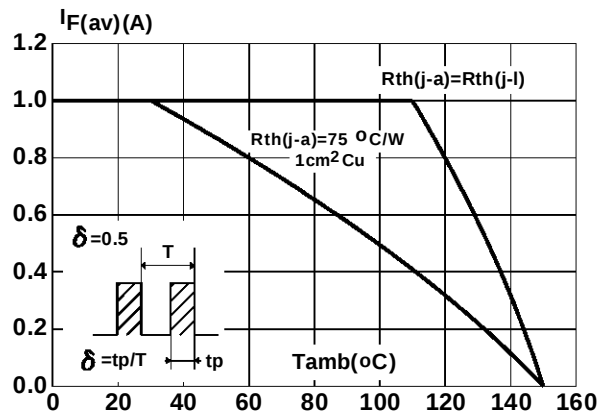


Fig.7 : Recovery time versus di_F/dt .

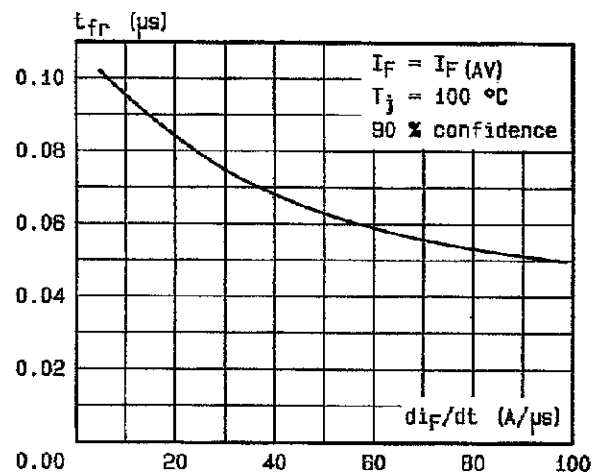


Fig.9 : Peak reverse current versus di_F/dt .

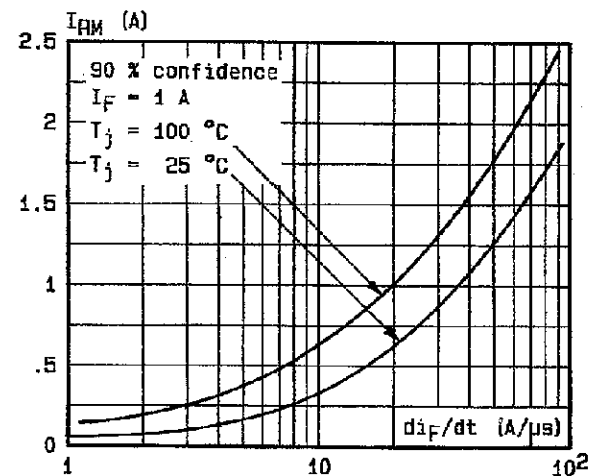


Fig.11 : Dynamic parameters versus junction temperature.

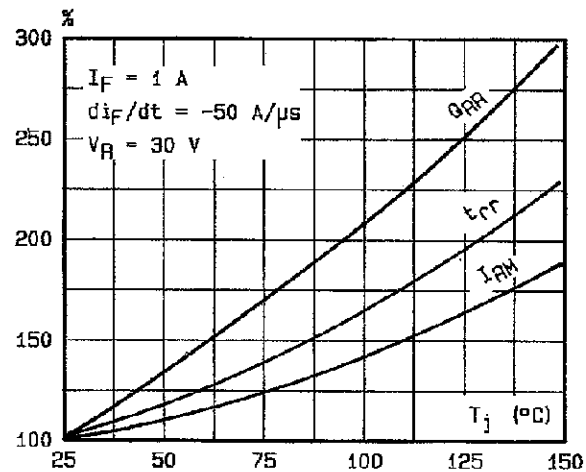


Fig.8 : Peak forward voltage versus di_F/dt .

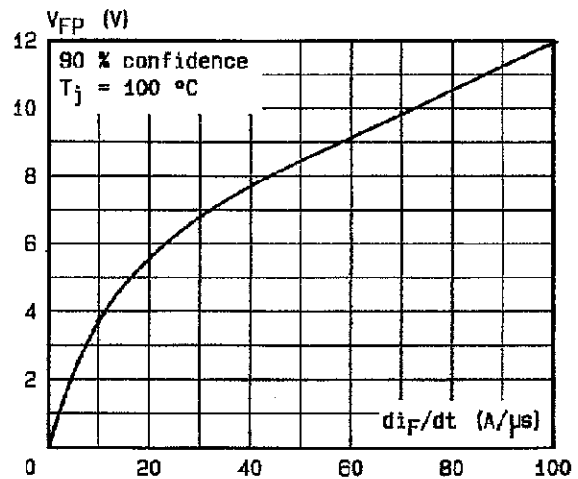


Fig.10 : Recovery charge versus di_F/dt . (typical values)

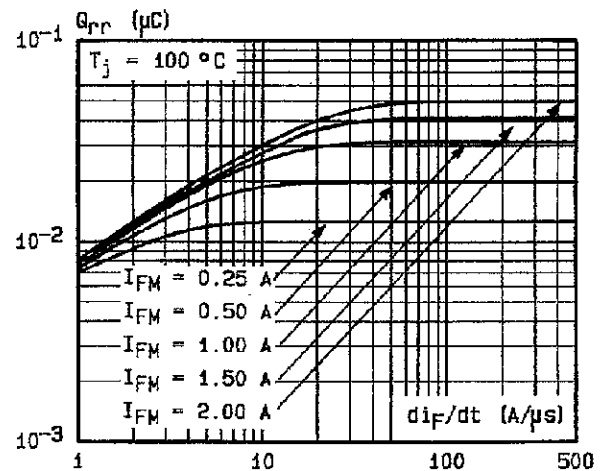
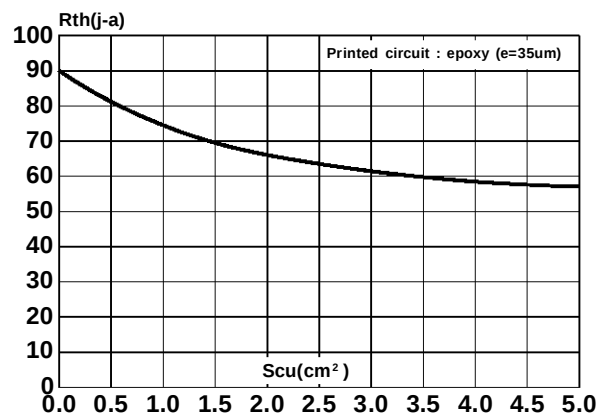
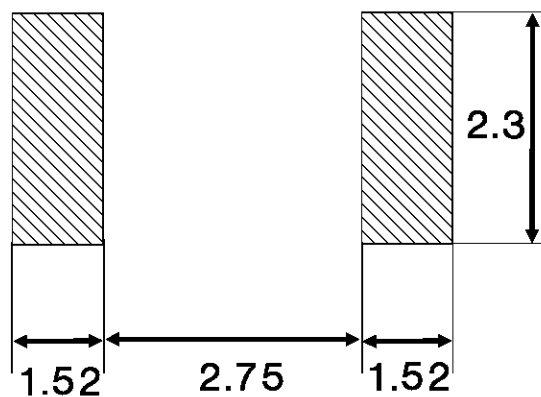
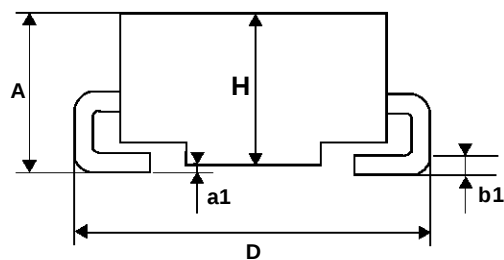
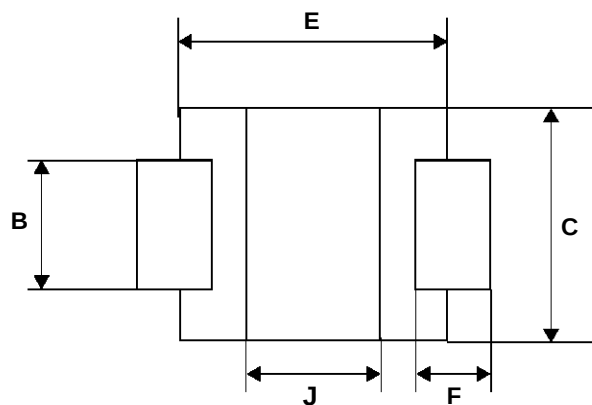


Fig.12 : Thermal resistance junction to ambient versus copper surface under each lead.



PACKAGE MECHANICAL DATA
SOD6


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.44	2.62	0.096	0.103
a1	0.10	0.20	0.004	0.008
B	1.96	2.11	0.077	0.083
b1	0.25	0.35	0.010	0.014
C	3.65	3.93	0.143	0.155
D	5.39	5.59	0.212	0.220
E	4.15	4.30	0.163	0.170
F	1.00	1.27	0.039	0.050
H	2.33	2.41	0.092	0.095
J	2.05	2.13	0.080	0.084



Laser Marking
 Logo indicated cathode

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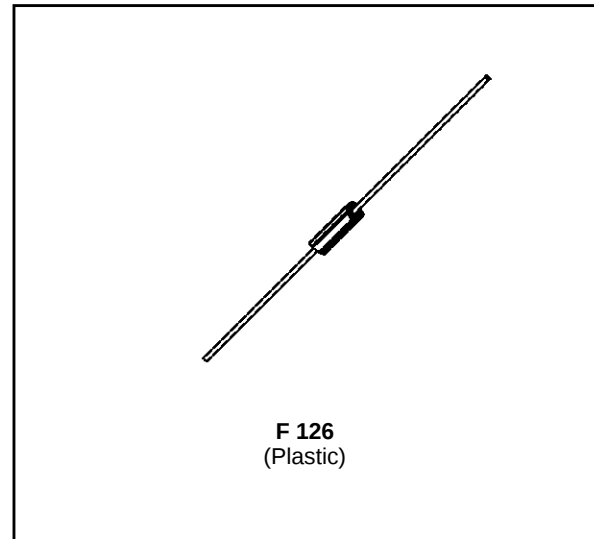
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FAST RECOVERY RECTIFIER DIODES

- SOFT RECOVERY
- VERY HIGH VOLTAGE
- SMALL RECOVERY CHARGE

APPLICATIONS

- ANTISATURATION DIODES FOR TRANSISTOR BASE DRIVE
- SNUBBER DIODES



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	20	A
$I_F (AV)$	Average Forward Current *	$T_a = 75^\circ C$ $\delta = 0.5$	1	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	35	A
P_{tot}	Power Dissipation *	$T_a = 55^\circ C$	1.25	W
T_{stg} T_j	Storage and Junction Temperature Range		- 55 to + 150 - 55 to + 150	$^\circ C$
T_L	Maximum Lead Temperature for Soldering during 10s at 4mm from Case		230	$^\circ C$

Symbol	Parameter	BYT 11-			Unit
		600	800	1000	
V_{RRM}	Repetitive Peak Reverse Voltage	600	800	1000	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient*	60	$^\circ C/W$

* On infinite heatsink with 10mm lead length.

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
I_R	$T_j = 25^\circ\text{C}$ $V_R = V_{RRM}$			20	μA
V_F	$T_j = 25^\circ\text{C}$ $I_F = 1\text{A}$			1.3	V

RECOVERY CHARACTERISTICS

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25^\circ\text{C}$ $I_F = 0.5\text{A}$ $I_R = 1\text{A}$ $I_{rr} = 0.25\text{A}$			100	ns

To evaluate the conduction losses use the following equations:

$$V_F = 1.1 + 0.075 I_F \quad P = 1.1 \times I_{F(AV)} + 0.075 I_{F(RMS)}^2$$

Figure 1. Maximum average power dissipation versus average forward current.

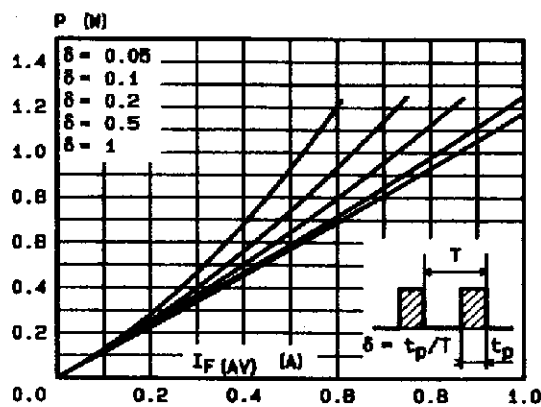


Figure 2. Average forward current versus ambient temperature.

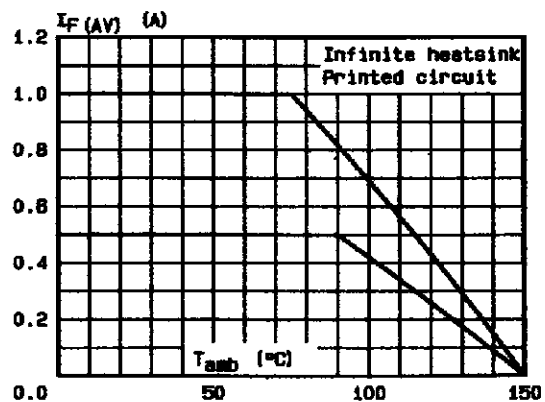
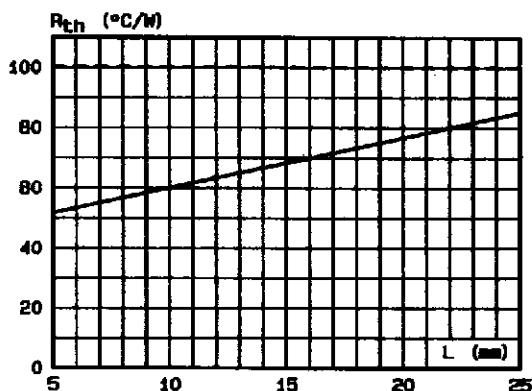
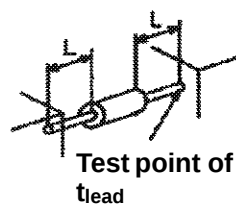


Figure 3. Thermal resistance versus lead length.



Mounting n°1
INFINITE HEATSINK



Mounting n°2
PRINTED CIRCUIT

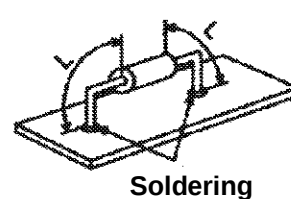


Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

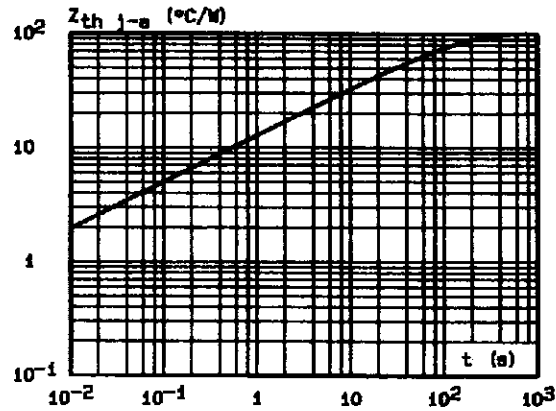


Figure 5. Peak forward current versus peak forward voltage drop (maximum values).

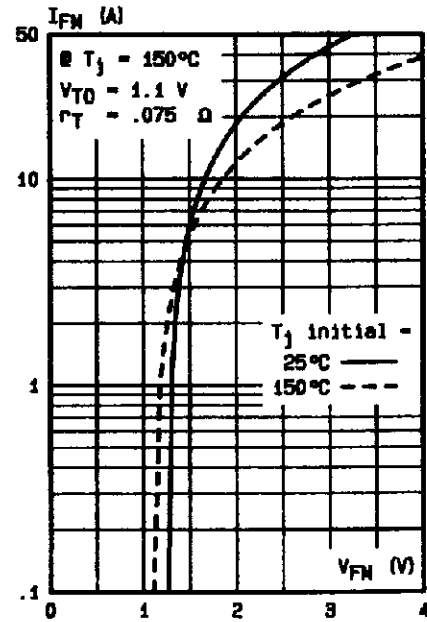


Figure 6. Capacitance versus reverse applied voltage

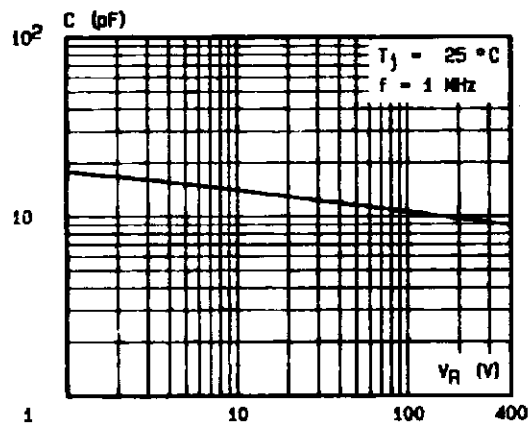
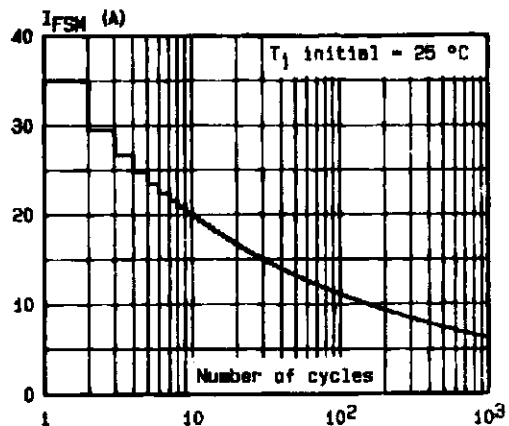
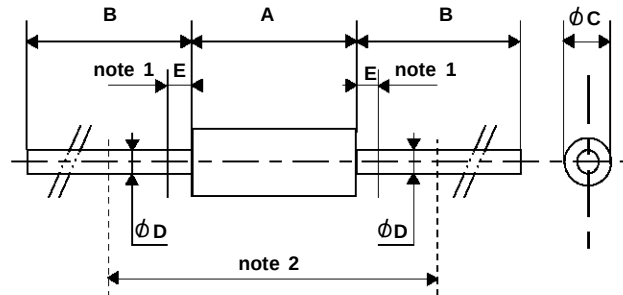


Figure 7. Non repetitive surge peak current versus number of cycles



PACKAGE MECHANICAL DATA

F 126 (Plastic)



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A	6.05	6.35	0.238	0.250	1 - The lead diameter Ø D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59”(15 mm)
B	26		1.024		
Ø C	2.95	3.05	0.116	0.120	
Ø D	0.76	0.86	0.029	0.034	
E		1.27		0.050	

Cooling method: by convection (method A)
 Marking: type number ring at cathode end
 Weight: 0.4g

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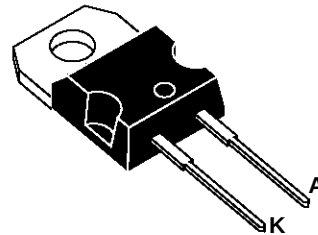
FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

SUITABLE APPLICATIONS

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

Cathode connected to case



TO220AC
(Plastic)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1000	V
V_{RSM}	Non Repetitive Peak Reverse Voltage		1000	V
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	150	A
$I_F (RMS)$	RMS Forward Current		25	A
$I_F (AV)$	Average Forward Current	$T_{case} = 100^\circ C$ $\delta = 0.5$	12	A
I_{FSM}	Surge Non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	75	A
P	Power Dissipation	$T_{case} = 100^\circ C$	25	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	$^\circ C$

THERMAL RESISTANCE

Symbol	Test Conditions	Value	Unit
$R_{th(j-c)}$	Junction-case	2	$^\circ C/W$

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			50	μA
	$T_J = 100^\circ\text{C}$				2.5	mA
V_F	$T_J = 25^\circ\text{C}$	$I_F = 12\text{A}$			1.9	V
	$T_J = 100^\circ\text{C}$				1.8	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_J = 25^\circ\text{C}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$			155	ns
		$I_F = 0.5\text{A}$	$I_R = 1\text{A}$			65	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = 12\text{A}$ $L_p \leq 0.05\mu\text{H}$ $T_J = 100^\circ\text{C}$ See figure 11			200	ns
	$di_F/dt = -100\text{A}/\mu\text{s}$			120		
I_{RM}	$di_F/dt = -50\text{A}/\mu\text{s}$				7.8	A
	$di_F/dt = -100\text{A}/\mu\text{s}$			9		

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_J = 100^\circ\text{C}$	$V_{CC} = 200\text{V}$	$I_F = I_{F(AV)}$			4.5	
	$di_F/dt = -12\text{A}/\mu\text{s}$	$L_p = 12\mu\text{H}$	See figure 12				

To evaluate the conduction losses use the following equations:

$$V_F = 1.47 + 0.026 I_F \quad P = 1.47 \times I_{F(AV)} + 0.026 I_{F(RMS)}^2$$

Figure 1. Low frequency power losses versus average current

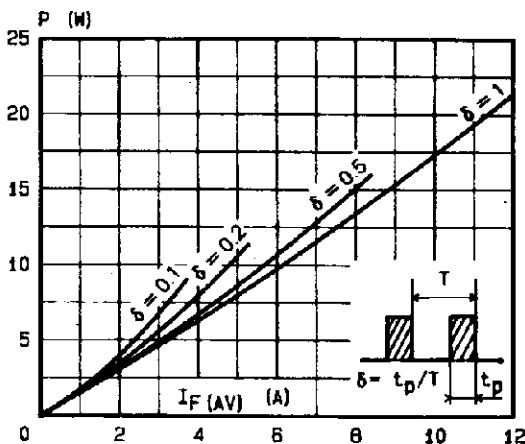


Figure 2. Peak current versus form factor

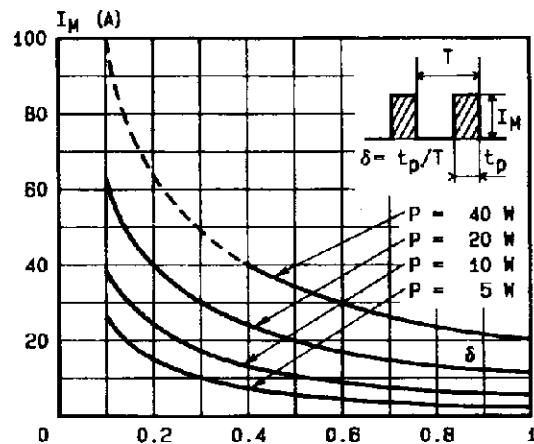


Figure 3. Non repetitive peak surge current versus overload duration

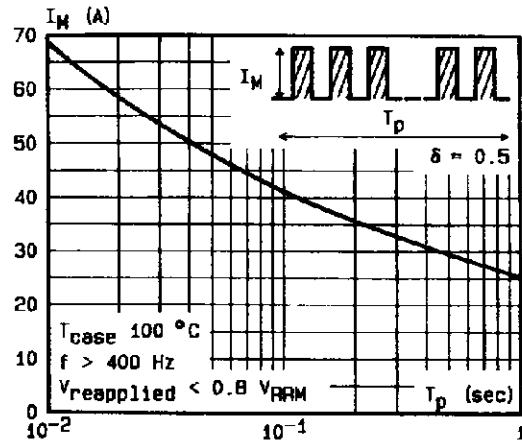


Figure 4. Thermal impedance versus pulse width

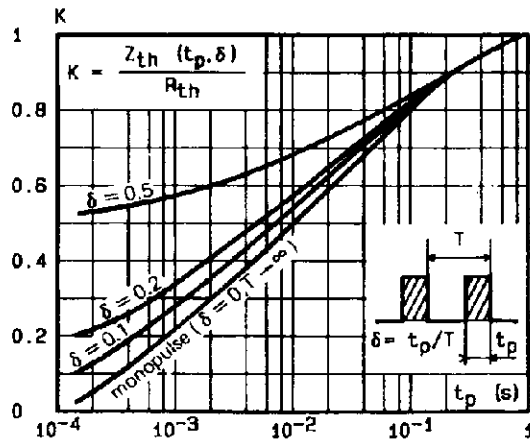


Figure 5. Voltage drop versus forward current

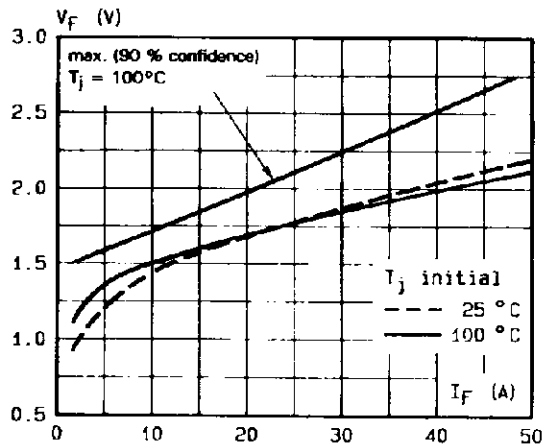


Figure 6. Recovery charge versus di_F/dt

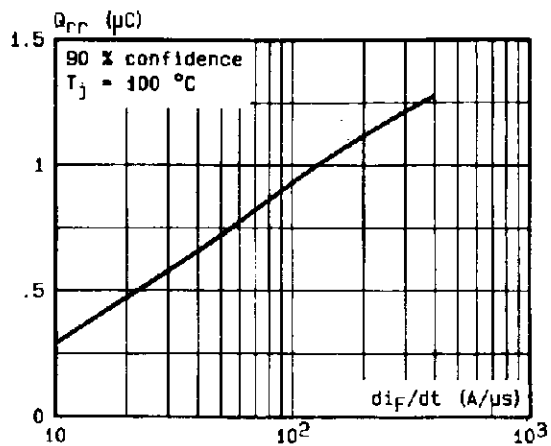


Figure 7. Recovery time versus di_F/dt

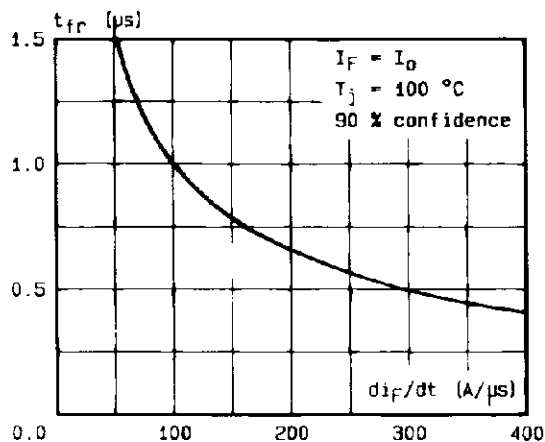


Figure 8. Peak reverse current versus di_F/dt

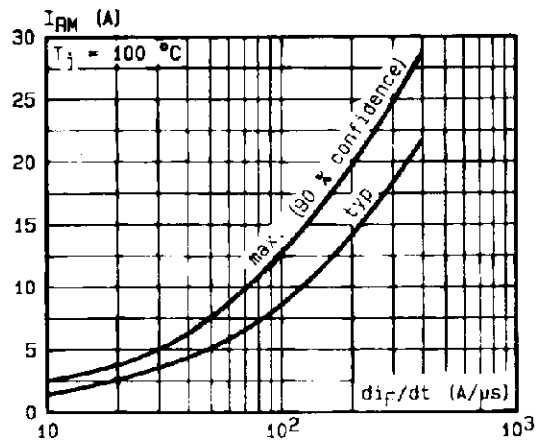


Figure 9. Peak forward voltage versus di_F/dt

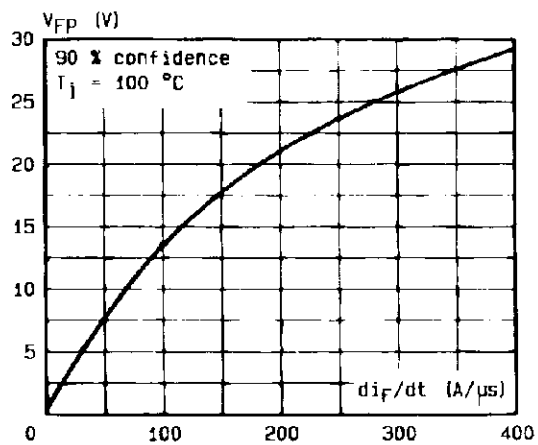


Figure 10. Dynamic parameters versus junction temperature.

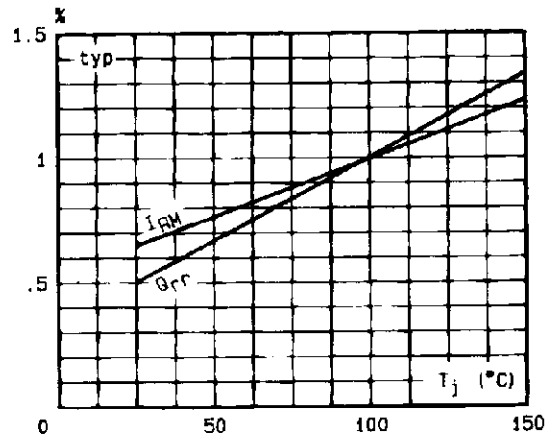


Figure 11. Turn-off switching characteristics (without series inductance).

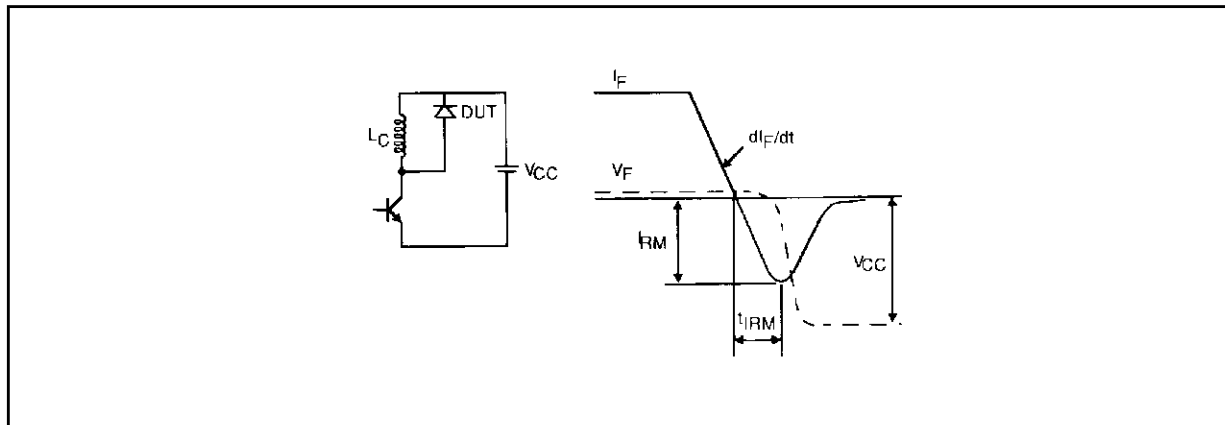
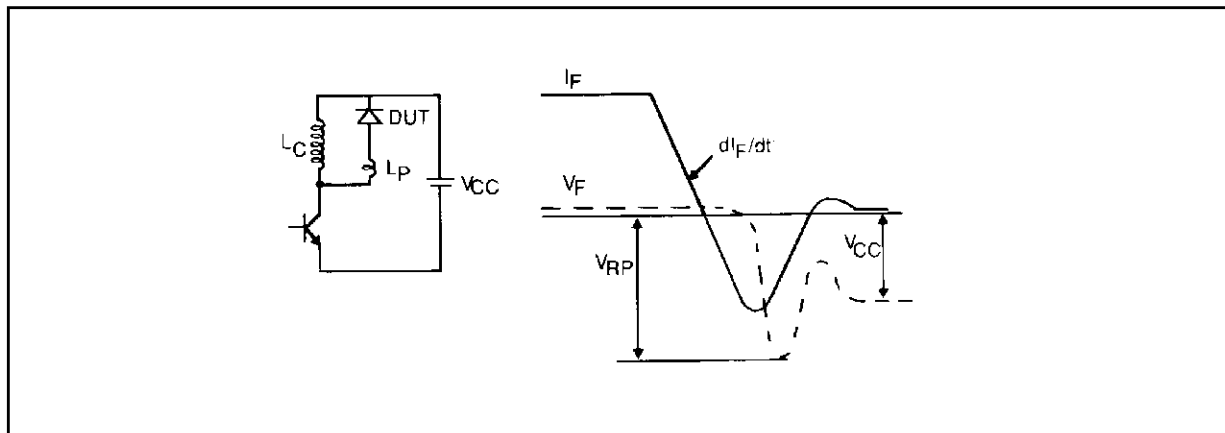
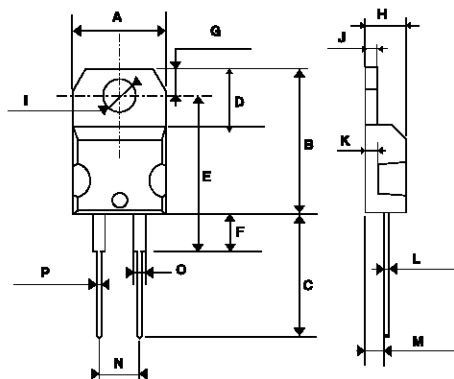


Figure 12. Turn-off switching characteristics (with series inductance)



PACKAGE MECHANICAL DATA :
 TO220AC Plastic


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.0	10.4	0.393	0.409
B	15.2	15.9	0.598	0.626
C	13	14	0.511	0.551
D	6.2	6.6***	0.244	0.260
E	16.4 typ.		0.645 typ.	
F	3.5	4.2	0.137	0.165
G	2.65	2.95	0.104	0.116
H	4.4	4.6	0.173	0.181
I	3.75	3.85	0.147	0.151
J	1.23	1.32	0.048	0.051
K	1.27 typ.		0.050 typ.	
L	0.49	0.70	0.019	0.027
M	2.4	2.72	0.094	0.107
N	4.95	5.15	0.194	0.203
O	1.14	1.70	0.044	0.067
P	0.61	0.88	0.024	0.034

Cooling method: by conduction (method C)

Marking: type number

Weight : 2.42g

Recommended torque value : 80cm. N

Maximum torque value : 100cm. N

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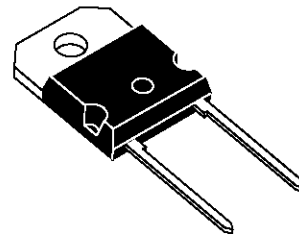
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FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

Cathode connected to case



SOD93
(Plastic)

SUITABLE APPLICATIONS

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1000	V
V_{RSM}	Non Repetitive Peak Reverse Voltage		1000	V
I_{FRM}	Repetive Peak Forward Current	$t_p \leq 10\mu s$	375	A
$I_F (RMS)$	RMS Forward Current		70	A
$I_F (AV)$	Average Forward Current	$T_c = 85^\circ C$ $\delta = 0.5$	30	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	200	A
P	Power Dissipation	$T_c = 85^\circ C$	60	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to +150 - 40 to +150	$^\circ C$

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	1	$^\circ C/W$

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			100	μA
	$T_J = 100^\circ\text{C}$				5	mA
V_F	$T_J = 25^\circ\text{C}$	$I_F = 30\text{A}$			1.9	V
	$T_J = 100^\circ\text{C}$				1.8	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_J = 25^\circ\text{C}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$	$V_R = 30\text{V}$		165	ns
		$I_F = 0.5\text{A}$	$I_R = 1\text{A}$	$I_{rr} = 0.25\text{A}$		70	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = -120\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = 30\text{A}$ $L_p \leq 0.05\mu\text{H}$ $T_J = 100^\circ\text{C}$ See figure 11			200	ns
	$di_F/dt = -240\text{A}/\mu\text{s}$			120		
I_{RM}	$di_F/dt = -120\text{A}/\mu\text{s}$				19.5	A
	$di_F/dt = -240\text{A}/\mu\text{s}$			22		

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_J = 100^\circ\text{C}$ $di_F/dt = -30\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = I_{F(AV)}$ $L_p = 5\mu\text{H}$ See figure 12			4.5	

To evaluate the conduction losses use the following equation:

$$V_F = 1.47 + 0.010 I_F \quad P = 1.47 \times I_{F(AV)} + 0.010 I_F^2(\text{RMS})$$

Figure 1. Low frequency power losses versus average current

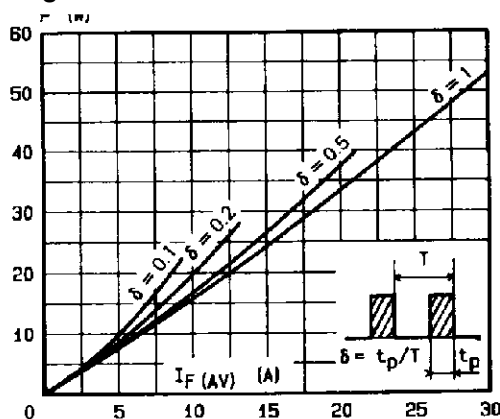


Figure 2. Peak current versus form factor

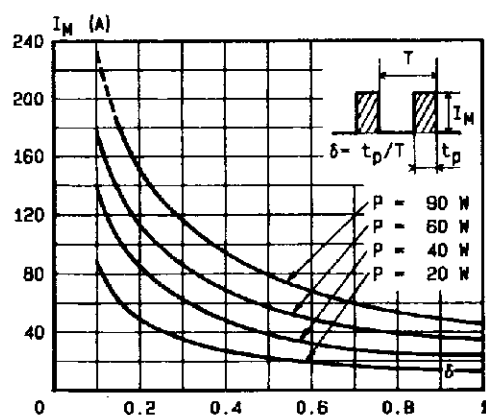


Figure 3. Non repetitive peak surge current versus overload duration

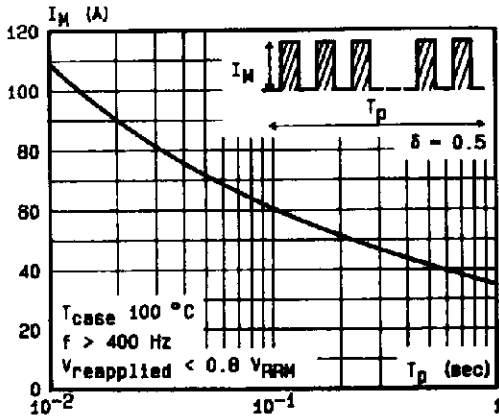


Figure 4. Thermal impedance versus pulse width

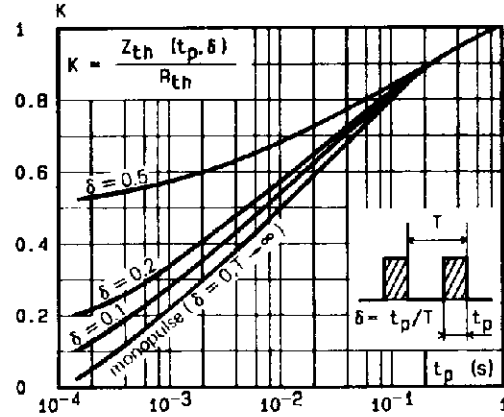


Figure 5. Voltage drop versus forward current

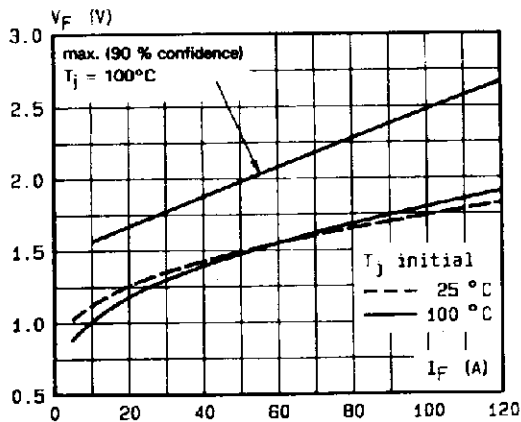


Figure 6. Recovery charge versus di_F/dt

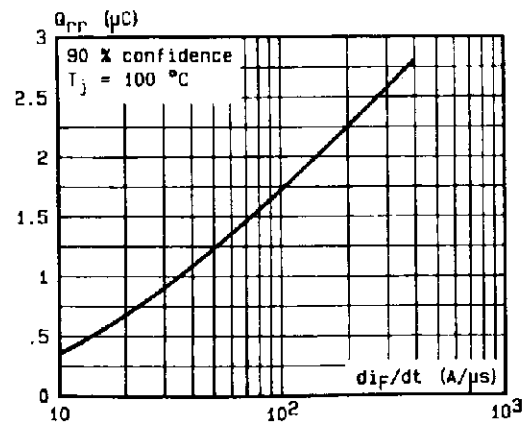


Figure 7. Recovery time versus di_F/dt

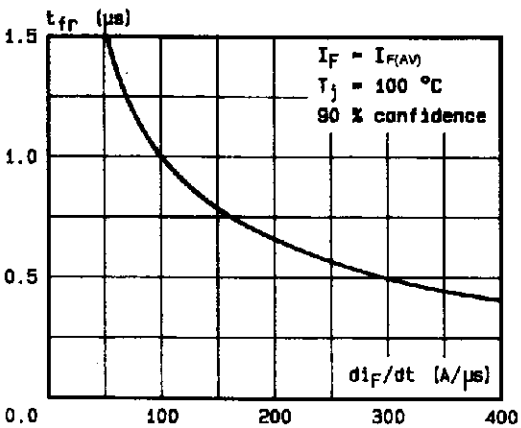


Figure 8. Peak reverse current versus di_F/dt

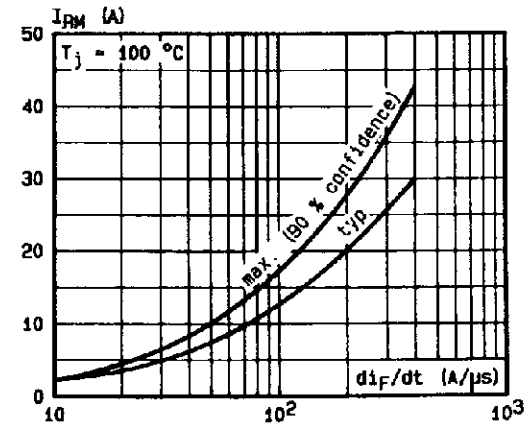


Figure 9. Peak forward voltage versus di_F/dt .

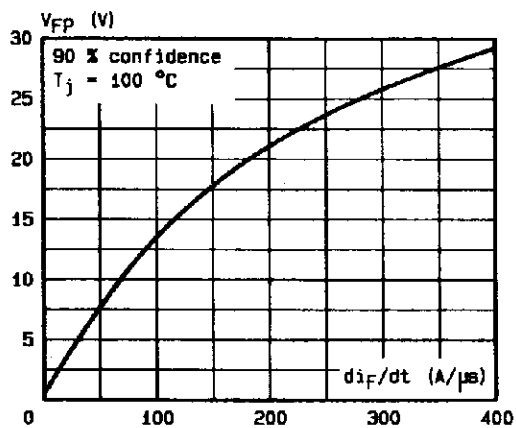


Figure 10. Dynamic parameters versus junction temperature.

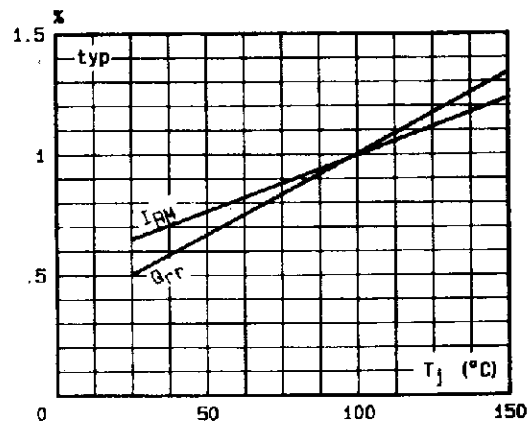


Figure 11. Turn-off switching characteristics (without series inductance).

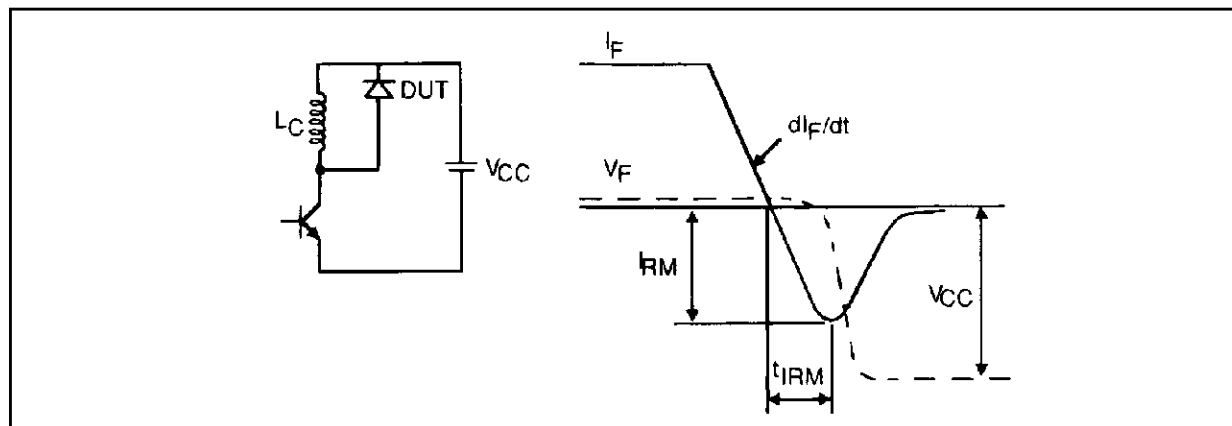
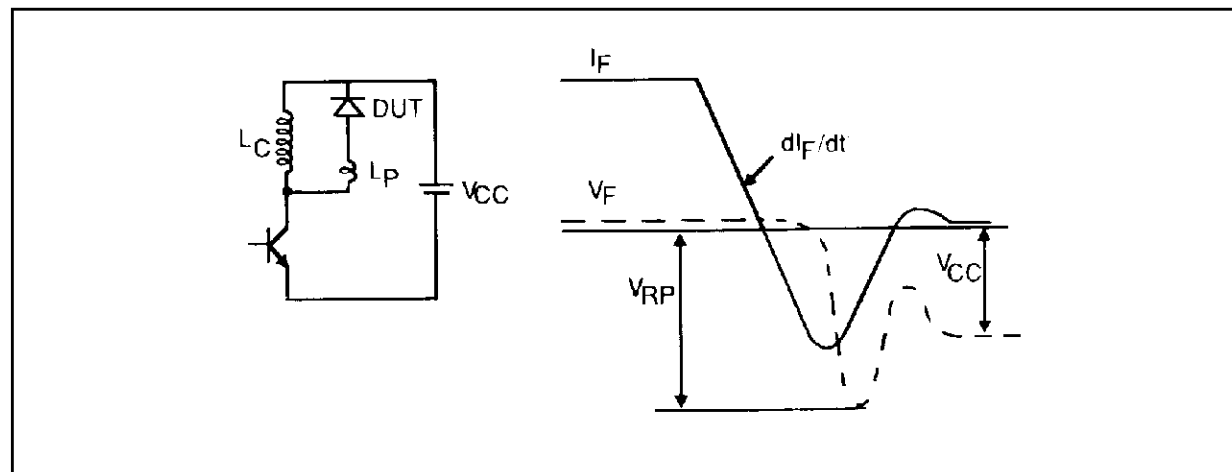
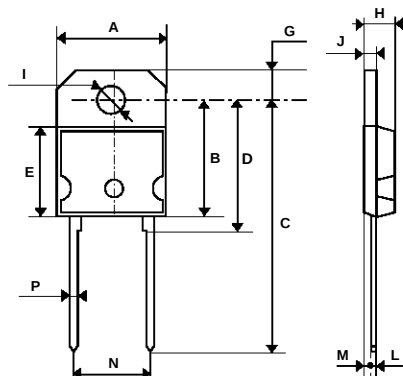


Figure 12. Turn-off switching characteristics (with series inductance)



PACKAGE MECHANICAL DATA
 SOD93 Plastic


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.7	15.2	0.578	0.596
B		16.2		0.637
C	31 typ		1.220 typ	
D	18 typ		0.708 typ	
E		12.2		0.480
G	3.95	4.15	0.155	0.163
H	4.7	4.9	0.185	0.193
I	4	4.1	0.157	0.161
J	1.17	1.37	0.046	0.054
L	0.5	0.78	0.019	0.030
M	2.5 typ		0.098 typ	
N	10.8	11.1	0.425	0.437
P	1.1	1.3	0.043	0.051

Cooling method: by conduction (method C)

Marking: type number

Weight: 4.3g

Recommended torque value: 80cm. N

Maximum torque value: 100cm. N

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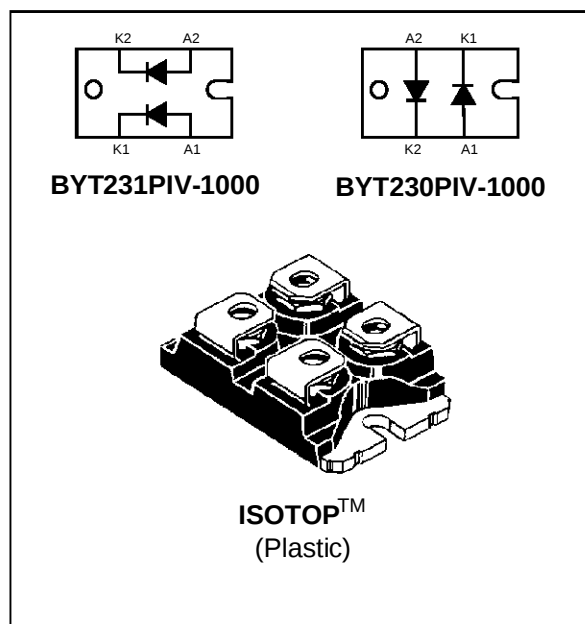
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
 Insulating voltage = 2500 V_{RMS}
 Capacitance = 45 pF

DESCRIPTION

Dual high voltage rectifiers suited for Switch Mode Power Supplies and other power converters. The devices are packaged in ISOTOP.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			1000	V
I _{FRM}	Repetitive peak forward current	tp ≤ 10μs		375	A
I _{F(RMS)}	RMS forward current		Per diode	70	A
I _{F(AV)}	Average forward current	T _C =55°C δ = 0.5	Per diode	30	A
I _{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	200	A
T _{stg} T _J	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

TM : ISOTOP is a trademark of **SGS-THOMSON Microelectronics**.

BYT230PIV-1000 / BYT231PIV-1000**THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.5	°C/W
		Total	0.8	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode}) \times R_{th}(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	T _j = 25°C	I _F = 30 A			1.9	V
	T _j = 100°C				1.8	
I _R **	T _j = 25°C	V _R = V _{RRM}			100	μA
	T _j = 100°C				5	mA

Pulse test : * tp = 380 μs, duty cycle < 2 %

** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _{rr} = 0.25A I _R = 1A			70	ns
		I _F = 1A dI _F /dt = -15A/μs V _R = 30V			165	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	dI _F /dt = -120A/μs	V _{CC} = 200V I _F = 30A L _p ≤ 0.05μH T _j = 100°C see fig. 11			200	ns
	dI _F /dt = -240A/μs			120		
I _{RM}	dI _F /dt = -120A/μs				19.5	A
	dI _F /dt = -240A/μs			22		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C V _{CC} = 200V I _F = I _{F(AV)} dI _F /dt = -30A/μs L _p = 5μH see fig.12				4.5	/

To evaluate the conduction losses use the following equation :

$$P = 1.47 \times I_{F(AV)} + 0.010 \times I_F^2(RMS)$$

Fig.1 : Low frequency power losses versus average current.

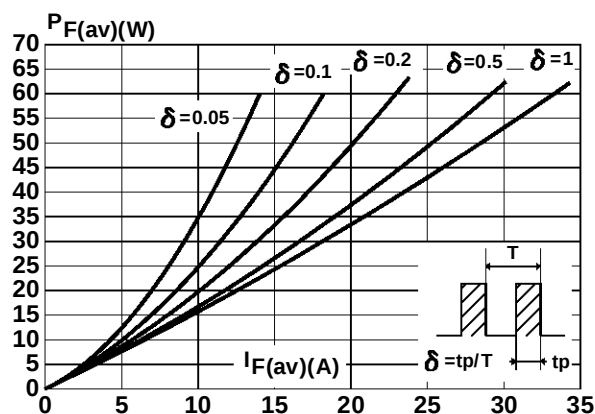


Fig.2 : Peak current versus form factor.

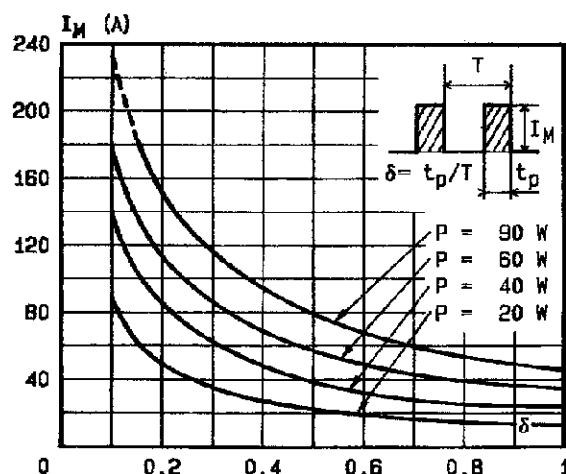


Fig.3 : Non repetitive peak surge current versus overload duration.

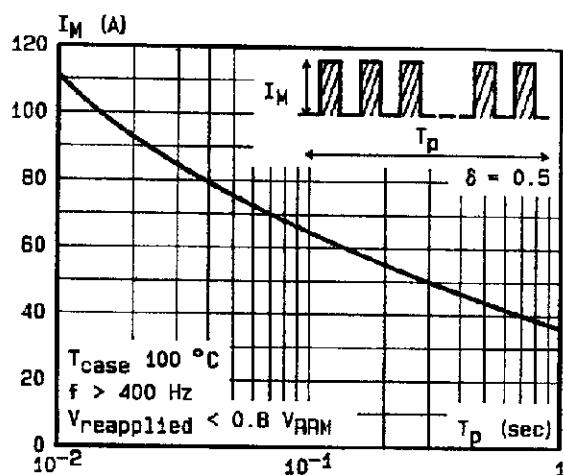


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

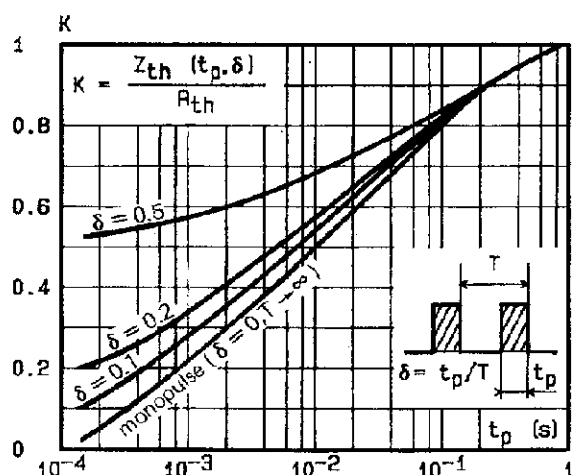


Fig.5 : Voltage drop versus forward current.

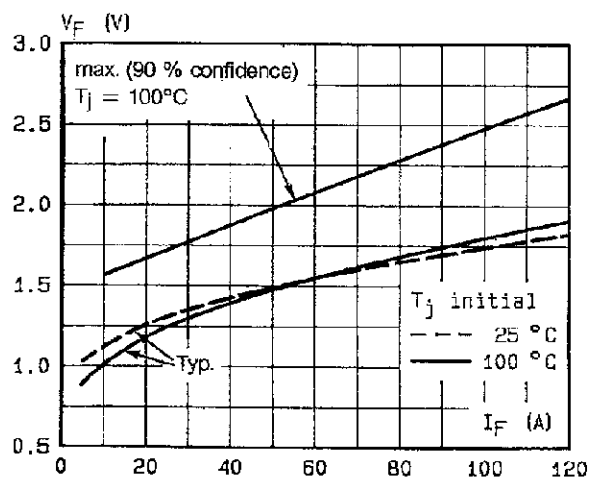


Fig.6 : Recovery charge versus di_F/dt.

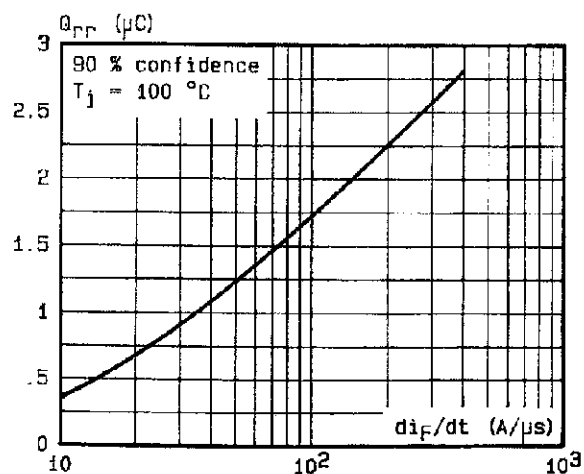


Fig.7 : Recovery time versus di_F/dt .

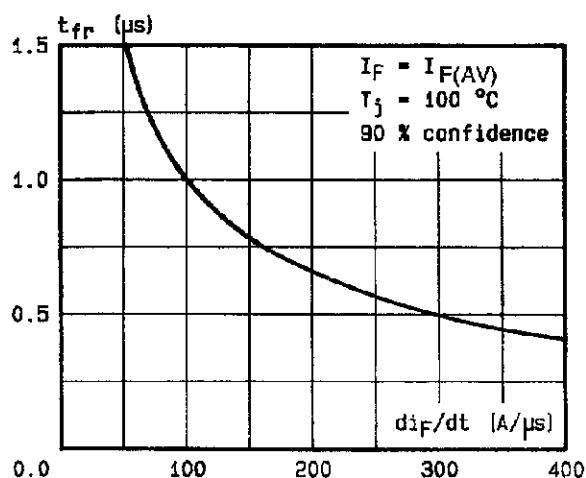


Fig.9 : Peak forward voltage versus di_F/dt .

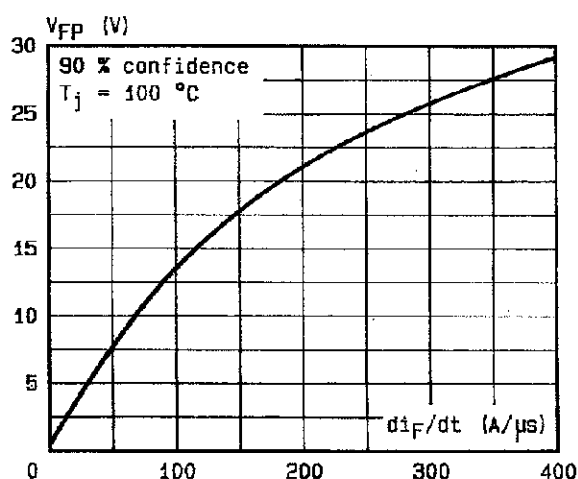


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without series inductance)

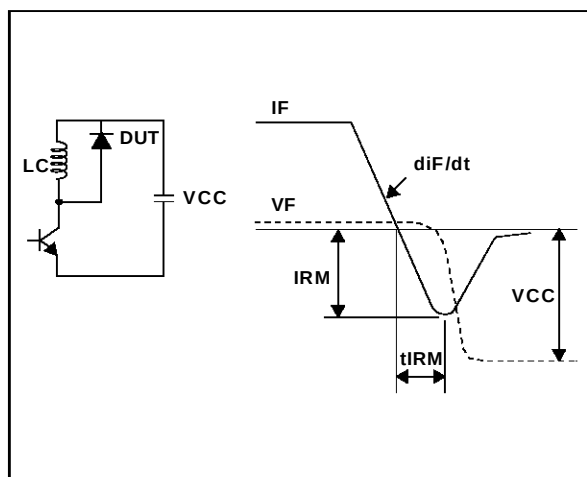


Fig.8 : Peak reverse current versus di_F/dt .

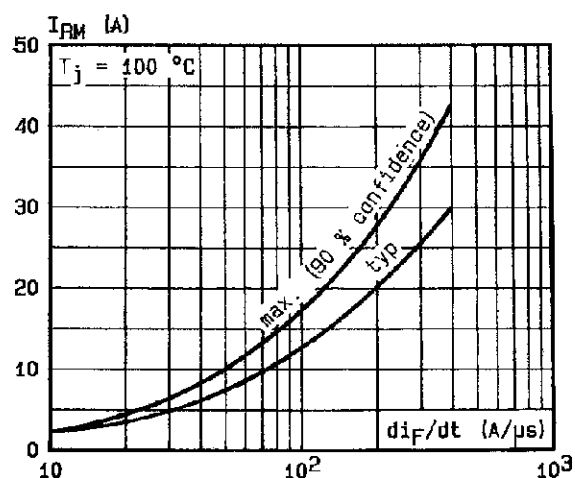


Fig.10 : Dynamic parameters versus junction temperature.

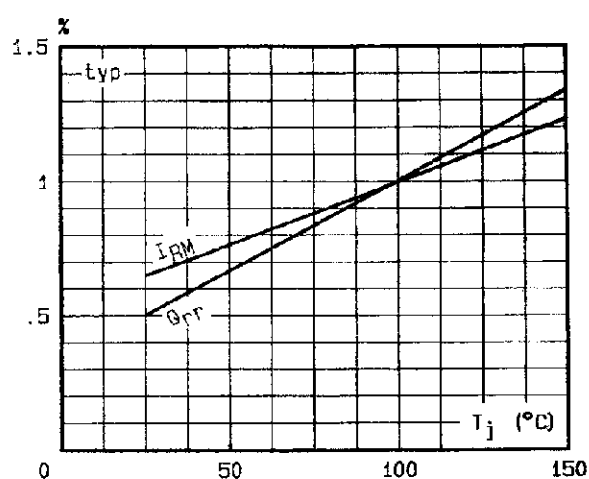
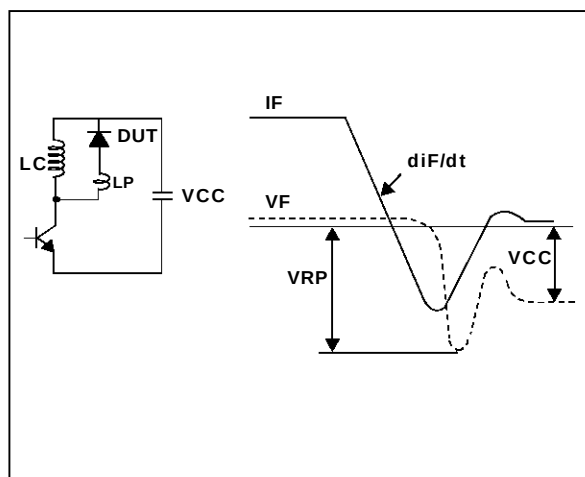
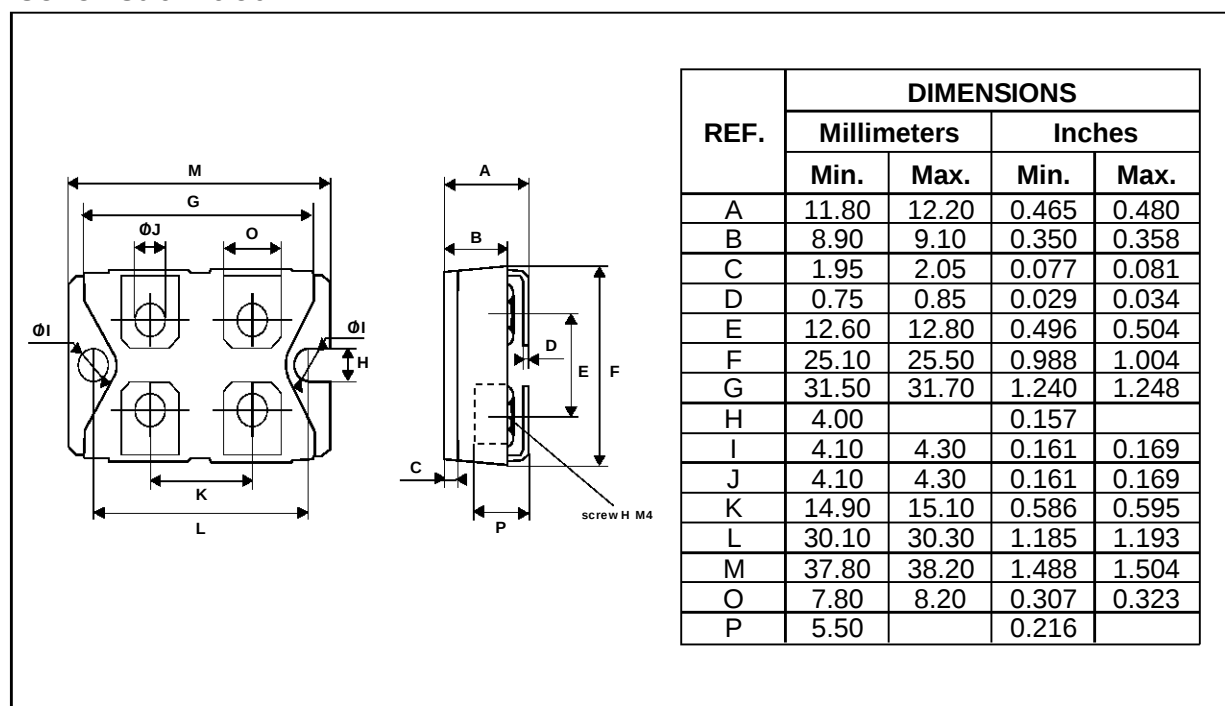


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With series inductance)



PACKAGE MECHANICAL DATA

ISOTOP Screw version



Cooling method : C

Marking : Type number

Weight : 28 g (without screws)

Electrical isolation : 2500V_(RMS)

Capitance : < 45 pF

Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

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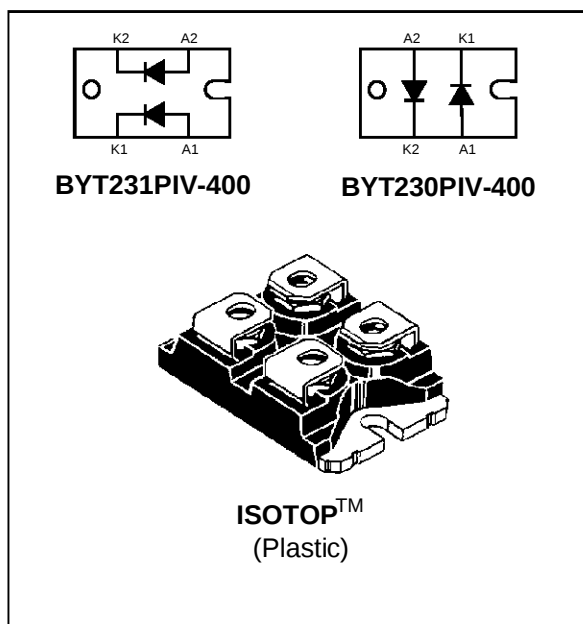
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
 Insulating voltage = 2500 V_{RMS}
 Capacitance = 45 pF

DESCRIPTION

Dual high voltage rectifiers ranging from 200V to 400V suited for Switch Mode Power Supplies and other power converters.
 The devices are packaged in ISOTOP.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
I _{FRM}	Repetitive peak forward current	tp ≤ 10μs		500	A
I _{F(RMS)}	RMS forward current	Per diode		50	A
I _{F(AV)}	Average forward current	T _c = 75°C δ = 0.5	Per diode	30	A
I _{FSM}	Surge non repetitive forward current	tp = 10ms sinusoidal	Per diode	350	A
T _{stg} T _j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	BYT230PIV- / BYT231PIV-			Unit
		200	300	400	
V _{RRM}	Repetitive peak reverse voltage	200	300	400	V

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BYT230PIV-400 / BYT231PIV-400**THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.5	°C/W
		Total	0.8	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode}) \times R_{th}(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	T _j = 25°C	I _F = 30 A			1.5	V
	T _j = 100°C				1.4	
I _R **	T _j = 25°C	V _R = V _{RRM}			35	μA
	T _j = 100°C				6	mA

Pulse test : * tp = 380 μs, duty cycle < 2 %

** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _{rr} = 0.25A I _R = 1A			50	ns
		I _F = 1A dI _F /dt = -15A/μs V _R = 30V			100	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	dI _F /dt = -120A/μs	V _{CC} = 200V I _F = 30A L _p ≤ 0.05μH T _j = 100°C see fig. 11			75	ns
	dI _F /dt = -240A/μs			50		
I _{RM}	dI _F /dt = -120A/μs				9	A
	dI _F /dt = -240A/μs			12		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C V _{CC} = 60V I _F = I _{F(AV)} dI _F /dt = -30A/μs L _p = 1μH	see note see fig.12		3.3		/

Note : Applicable to BYT230PIV-400 / BYT231PIV-400 only

To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_{F(AV)} + 0.0095 \times I_F^2(\text{RMS})$$

Fig.1 : Low frequency power losses versus average current.

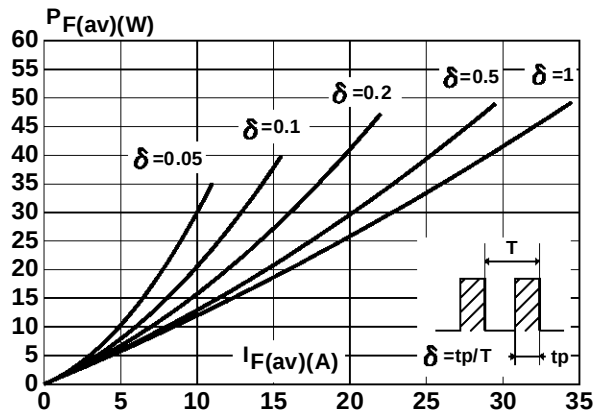


Fig.2 : Peak current versus form factor.

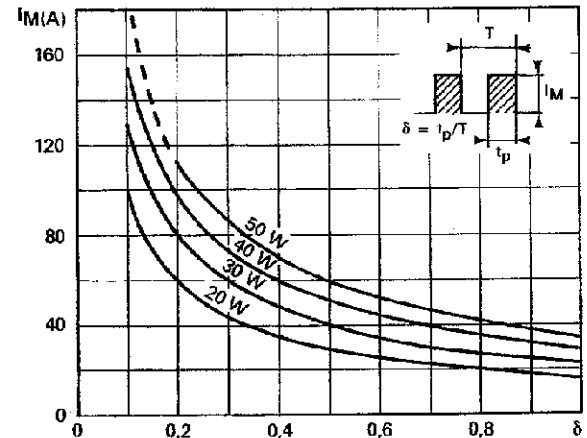


Fig.3 : Non repetitive peak surge current versus overload duration.

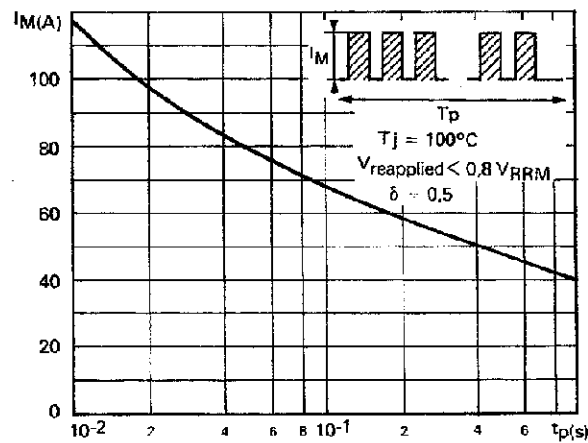


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

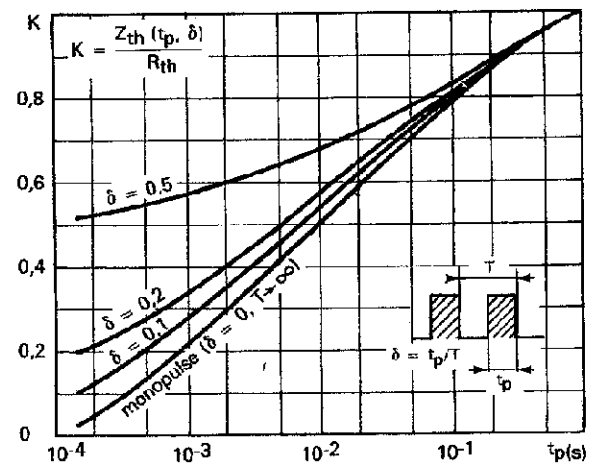


Fig.5 : Voltage drop versus forward current.

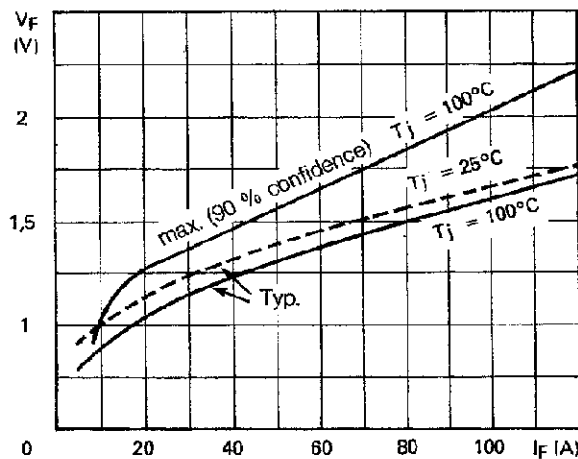


Fig.6 : Recovery charge versus di_F/dt .

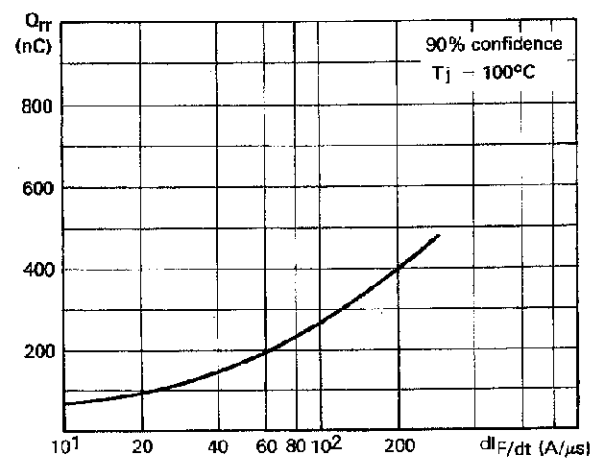


Fig.7 : Recovery time versus di_F/dt .

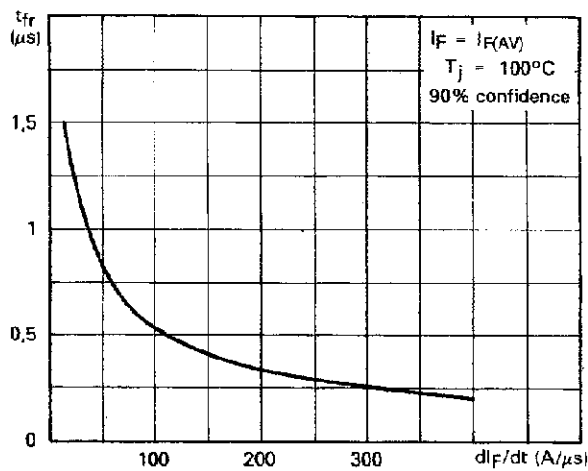


Fig.9 : Peak forward voltage versus di_F/dt .

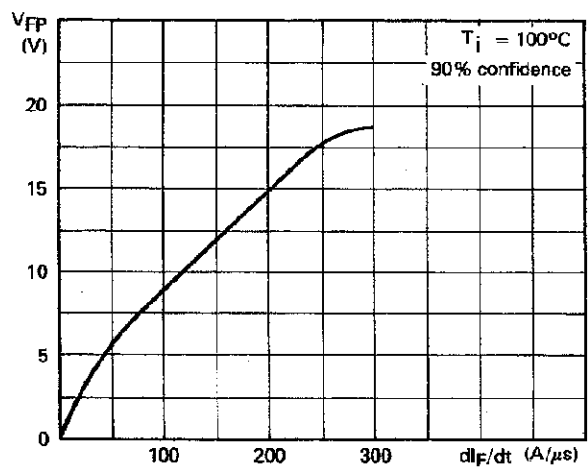


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

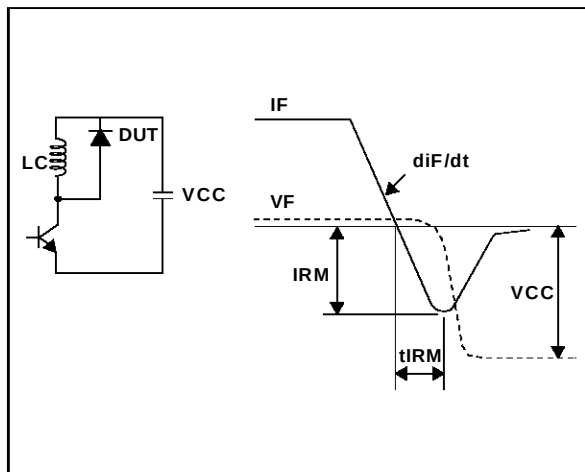


Fig.8 : Peak reverse current versus di_F/dt .

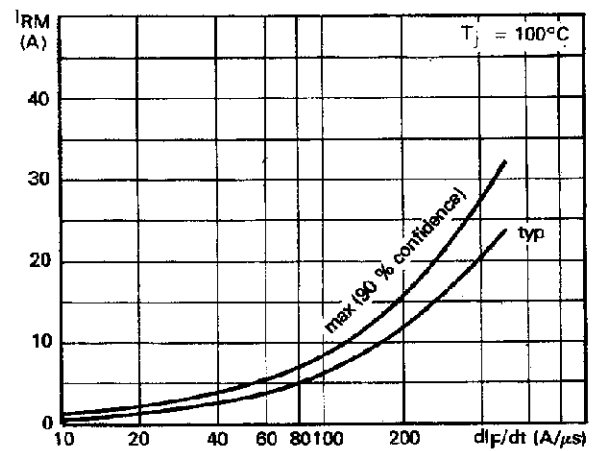


Fig.10 : Dynamic parameters versus junction temperature.

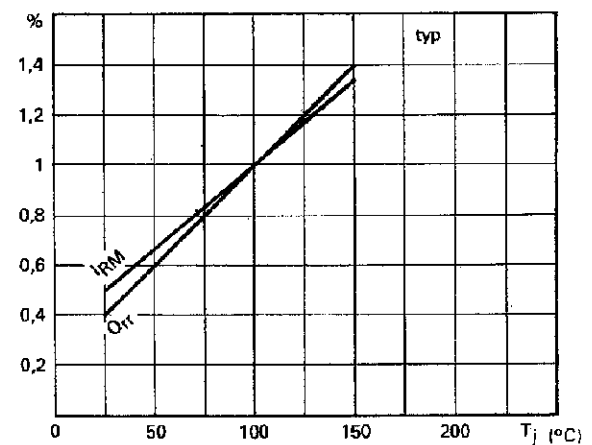
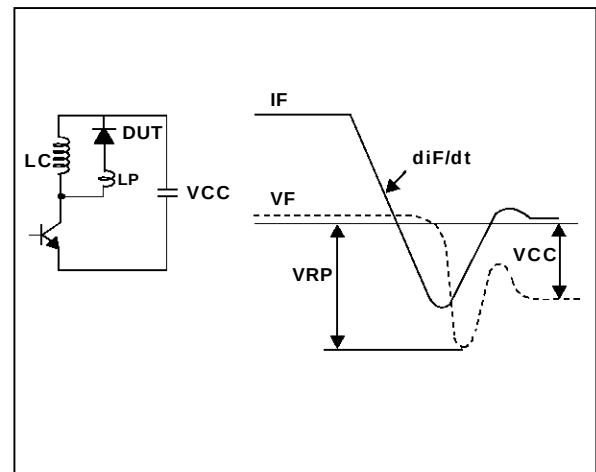
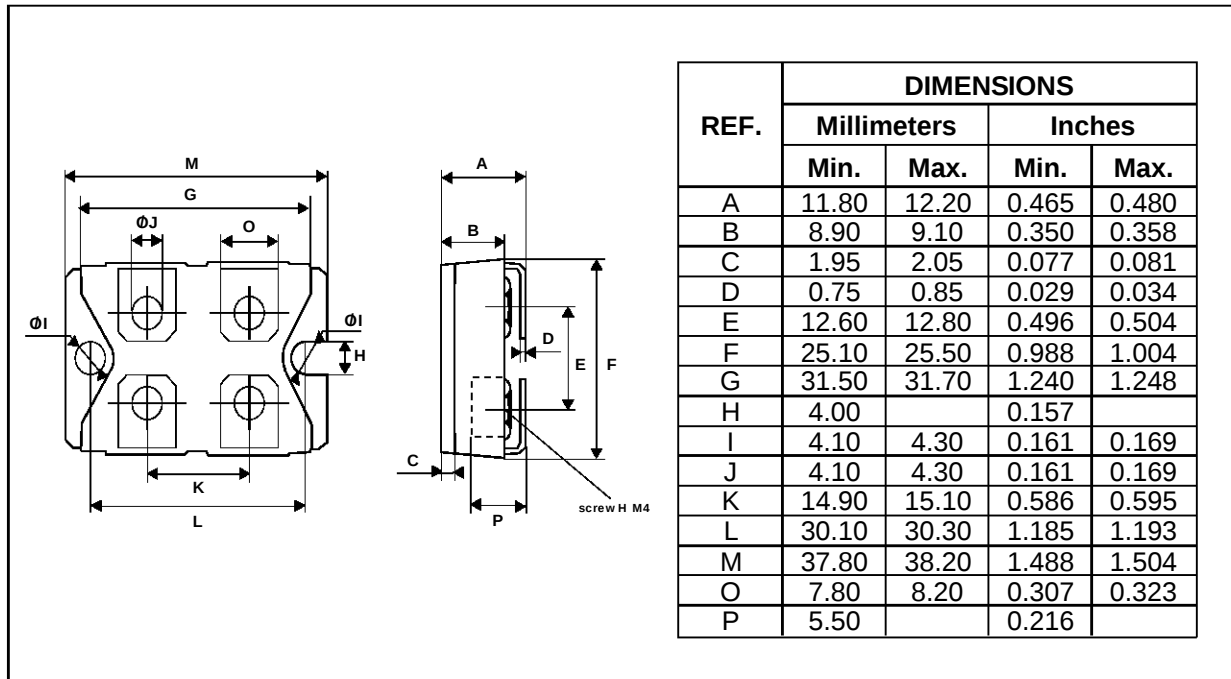


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



PACKAGE MECHANICAL DATA
 ISOTOP Screw version


Cooling method : C
 Marking : Type number
 Weight : 28 g (without screws)
 Electrical isolation : 2500V_(RMS)
 Capacitance : < 45 pF
 Inductance : < 5nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

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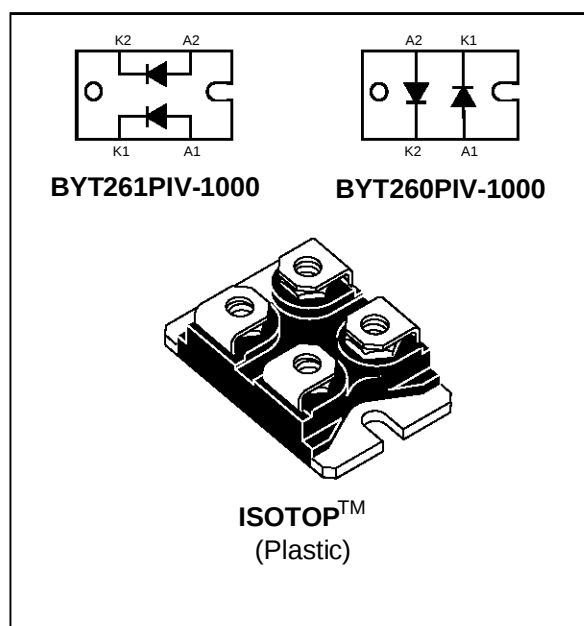
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
 Insulating voltage = 2500 V_{RMS}
 Capacitance = 45 pF

DESCRIPTION

Dual high voltage rectifiers suited for Switch Mode Power Supplies and other power converters. The devices are packaged in ISOTOP.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			1000	V
I _{FRM}	Repetitive peak forward current	tp ≤ 10μs		750	A
I _{F(RMS)}	RMS forward current		Per diode	140	A
I _{F(AV)}	Average forward current	T _c = 60°C δ = 0.5	Per diode	60	A
I _{FSM}	Surge non repetitive forward current	tp = 10ms sinusoidal	Per diode	400	A
T _{stg} T _j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

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BYT260PIV-1000 / BYT261PIV-1000**THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	0.7	°C/W
		Total	0.4	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode}) \times R_{th}(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	T _j = 25°C	I _F = 60 A			1.9	V
	T _j = 100°C				1.8	
I _R **	T _j = 25°C	V _R = V _{RRM}			100	μA
	T _j = 100°C				6	mA

Pulse test : * tp = 380 μs, duty cycle < 2 %

** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _{rr} = 0.25A I _R = 1A			70	ns
		I _F = 1A dI _F /dt = -15A/μs V _R = 30V			170	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	dI _F /dt = -240A/μs	V _{CC} = 200V I _F = 60A L _p ≤ 0.05μH T _j = 100°C see fig. 11			200	ns
	dI _F /dt = -480A/μs			120		
I _{RM}	dI _F /dt = -240A/μs				40	A
	dI _F /dt = -480A/μs			44		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C V _{CC} = 200V I _F = I _{F(AV)} dI _F /dt = -60A/μs L _p = 2.5μH see fig.12			3.3	4.5	/

To evaluate the conduction losses use the following equation :

$$P = 1.47 \times I_{F(AV)} + 0.005 \times I_F^2(RMS)$$

Fig.1 : Low frequency power losses versus average current.

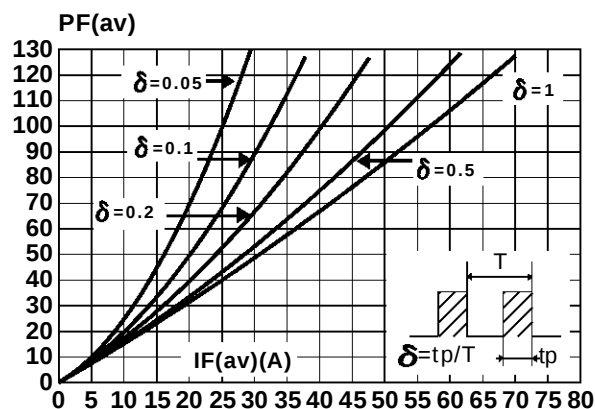


Fig.2 : Peak current versus form factor.

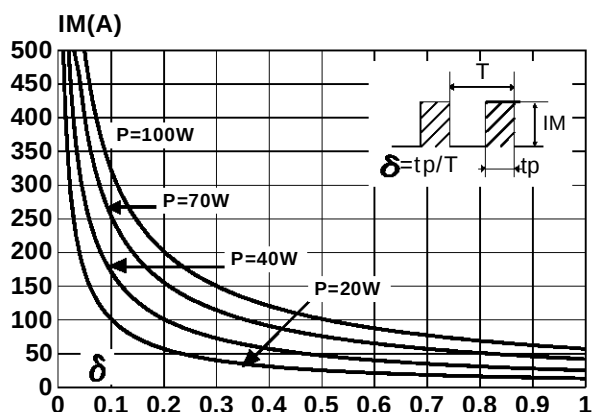


Fig.3 : Non repetitive peak surge current versus overload duration.

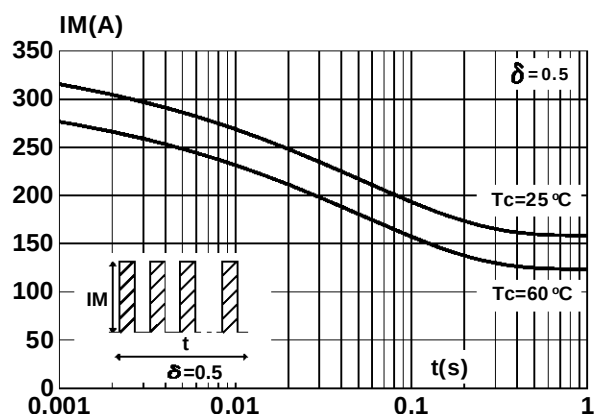


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

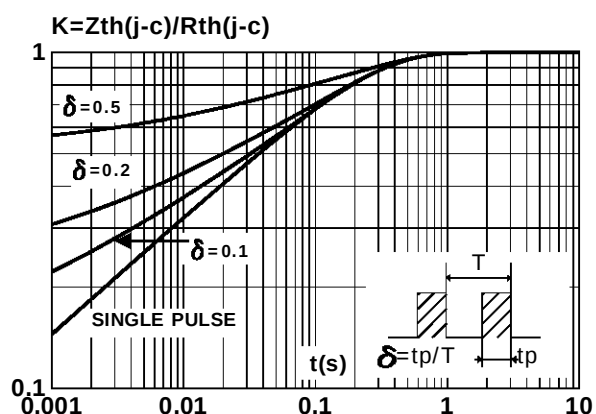


Fig.5 : Voltage drop versus forward current.

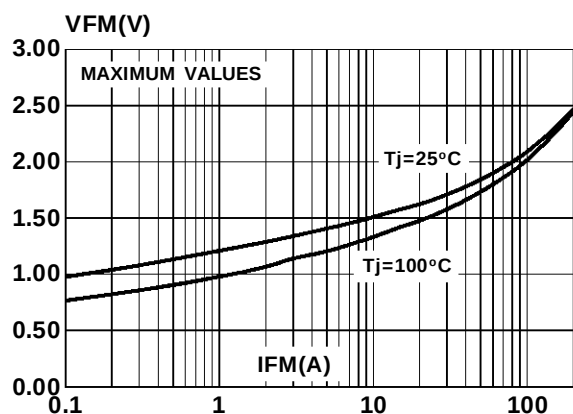


Fig.6 : Recovery charge versus di_F/dt .

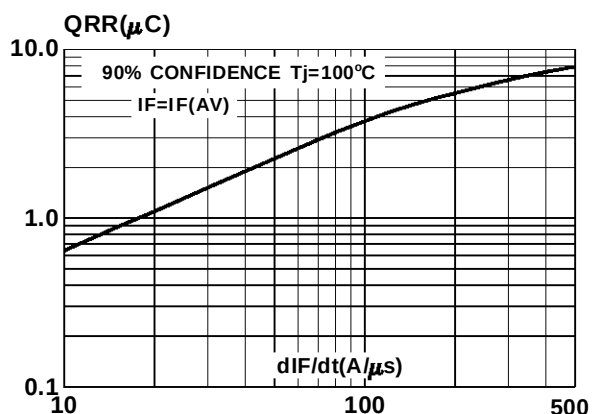


Fig.7 : Recovery time versus di_F/dt .

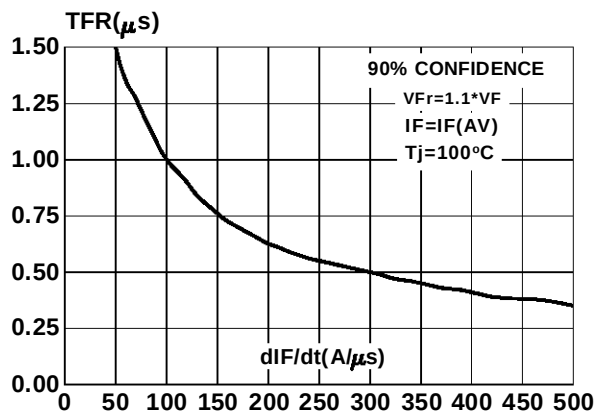


Fig.8 : Peak reverse current versus di_F/dt .

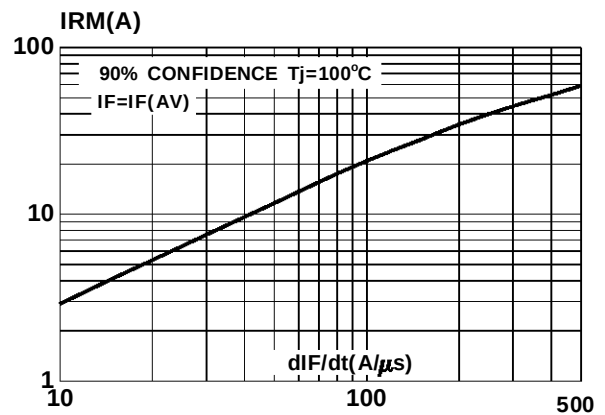


Fig.9 : Peak forward voltage versus di_F/dt .

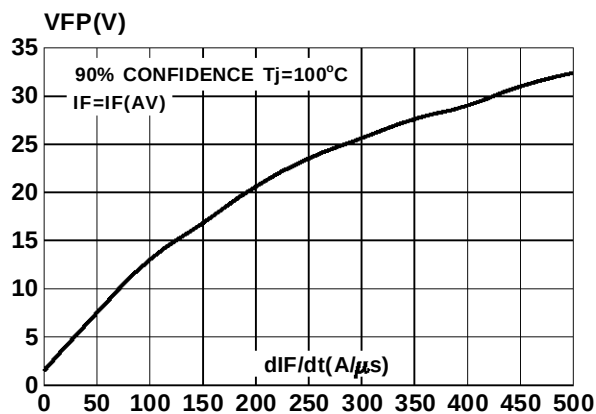


Fig.10 : Dynamic parameters versus junction temperature.

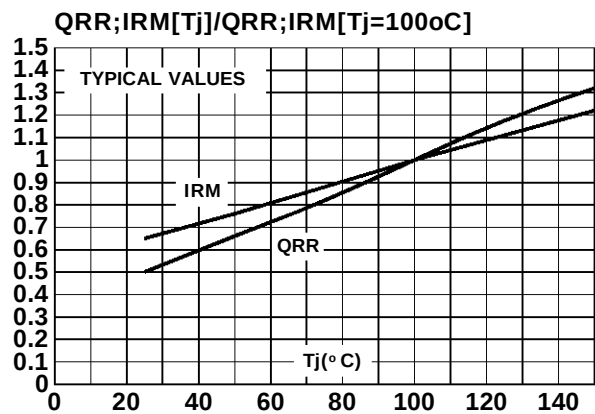


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

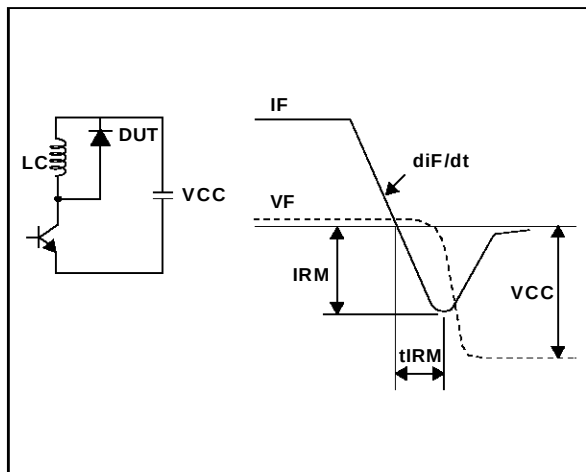
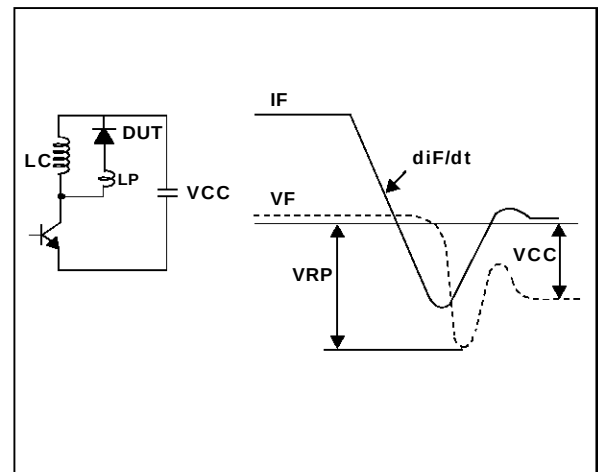
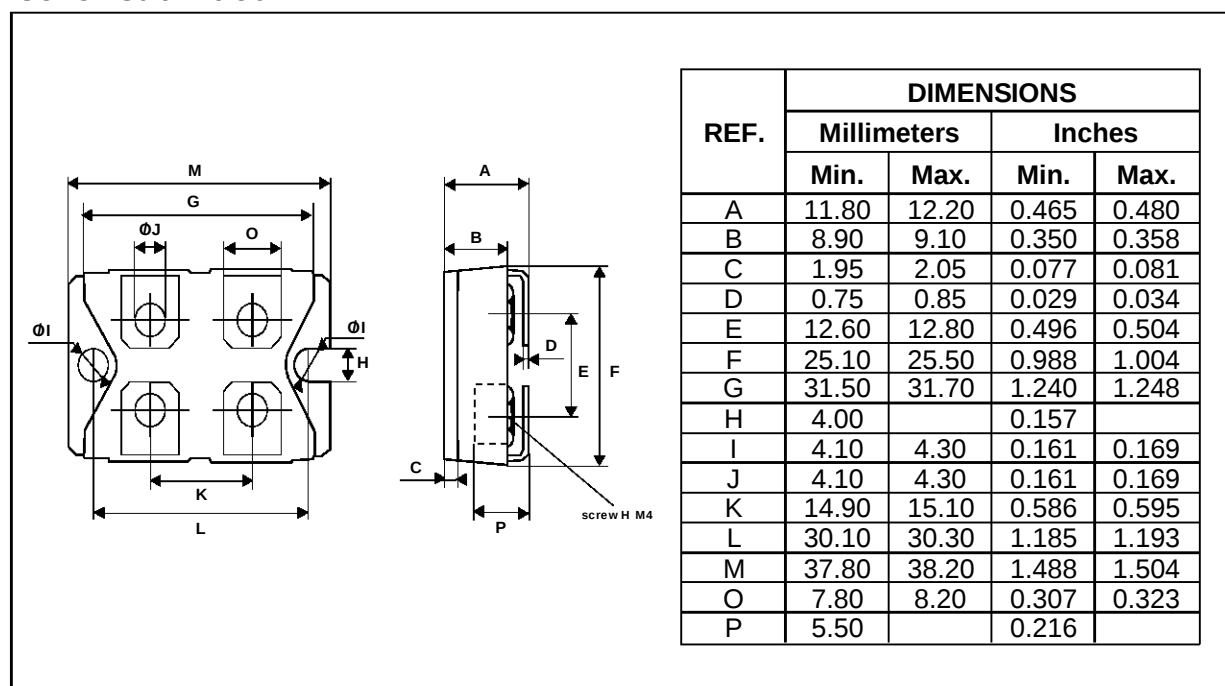


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



PACKAGE MECHANICAL DATA

ISOTOP Screw version



Cooling method : C

Marking : Type number

Weight : 28 g (without screws)

Electrical isolation : 2500V_(RMS)

Capacitance : < 45 pF

Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

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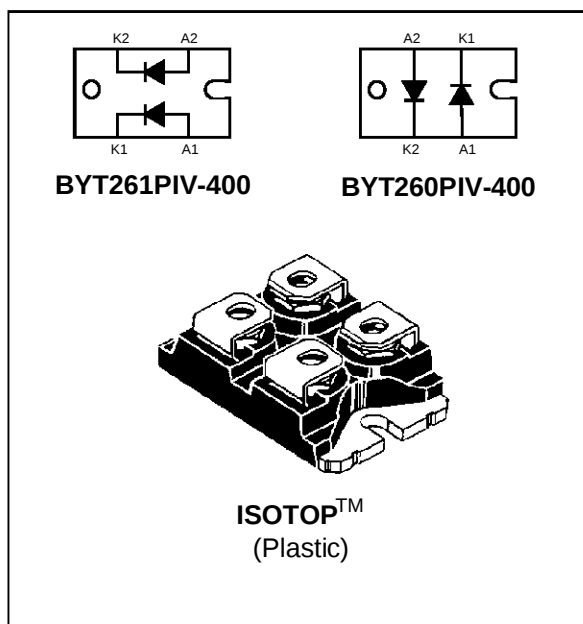
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
 Insulating voltage = 2500 V_{RMS}
 Capacitance = 45 pF

DESCRIPTION

Dual high voltage rectifiers ranging from 400V to 200V suited for Switch Mode Power Supplies and other power converters.
 The devices are packaged in ISOTOP.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
I _{FRM}	Repetitive peak forward current	tp ≤ 10μs		800	A
I _{F(RMS)}	RMS forward current		Per diode	140	A
I _{F(AV)}	Average forward current	T _c =80°C δ = 0.5	Per diode	60	A
I _{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	600	A
T _{stg} T _j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	BYT261PIV-/BYT260PIV-			Unit
		200	300	400	
V _{RRM}	Repetitive peak reverse voltage	200	300	400	V

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BYT261PIV-400**THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	0.7	°C/W
		Total	0.4	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode}) \times R_{th}(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	T _j = 25°C	I _F = 60 A			1.5	V
	T _j = 100°C				1.4	
I _R **	T _j = 25°C	V _R = V _{RRM}			60	μA
	T _j = 100°C				6	mA

Pulse test : * tp = 380 μs, duty cycle < 2 %

** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _{rr} = 0.25A I _R = 1A			50	ns
		I _F = 1A dI _F /dt = -15A/μs V _R = 30V			100	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	dI _F /dt = -240A/μs	V _{CC} = 200V I _F = 60A L _p ≤ 0.05μH T _j = 100°C see fig. 11			75	ns
	dI _F /dt = -480A/μs			50		
I _{RM}	dI _F /dt = -240A/μs				18	A
	dI _F /dt = -480A/μs			24		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C V _{CC} = 120V I _F = I _{F(AV)} dI _F /dt = -60A/μs L _p = 0.8μH	see note see fig.12		3.3	4	/

Note : Applicable to BYT261PIV-400 only

To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_{F(AV)} + 0.0045 \times I_F^2(RMS)$$

Fig.1 : Low frequency power losses versus average current.

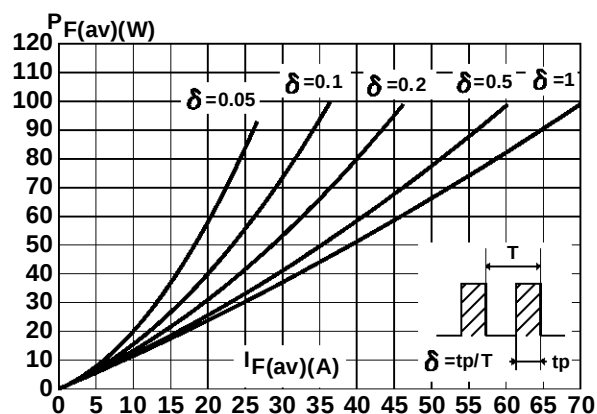


Fig.2 : Peak current versus form factor.

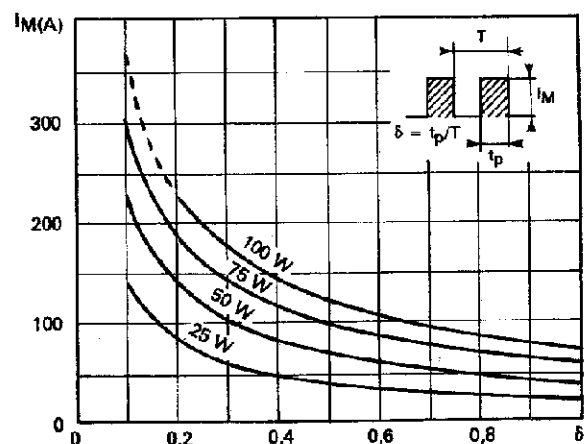


Fig.3 : Non repetitive peak surge current versus overload duration.

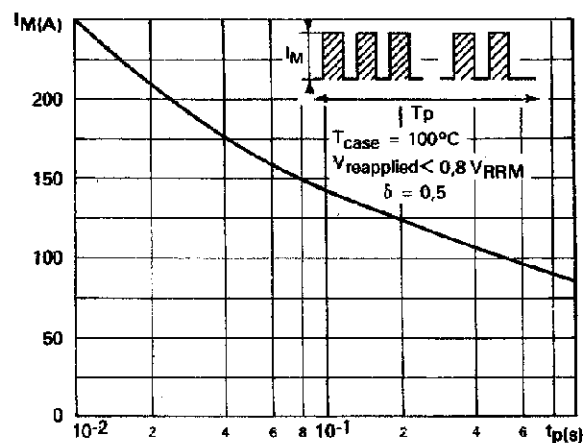


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

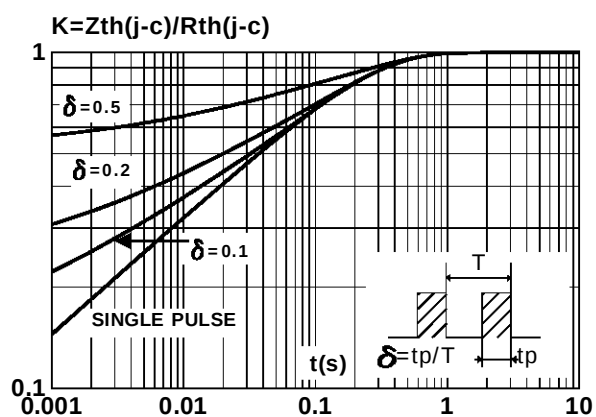


Fig.5 : Voltage drop versus forward current.

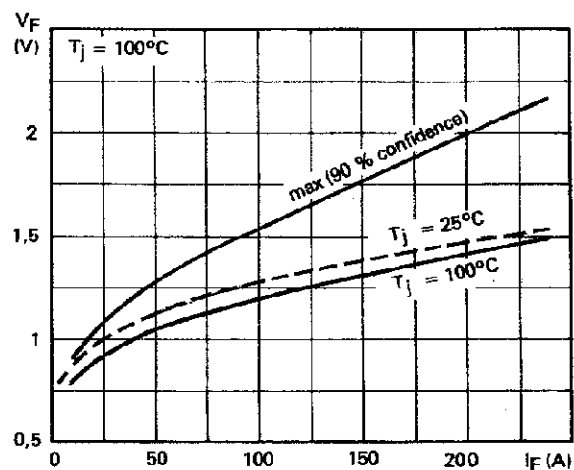


Fig.6 : Recovery charge versus di_F/dt.

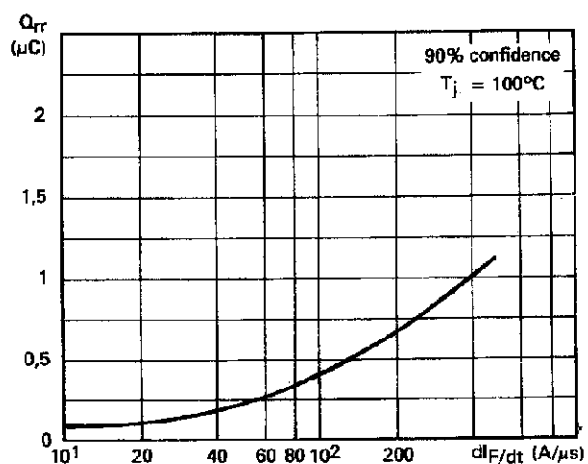


Fig.7 : Recovery time versus di_F/dt .

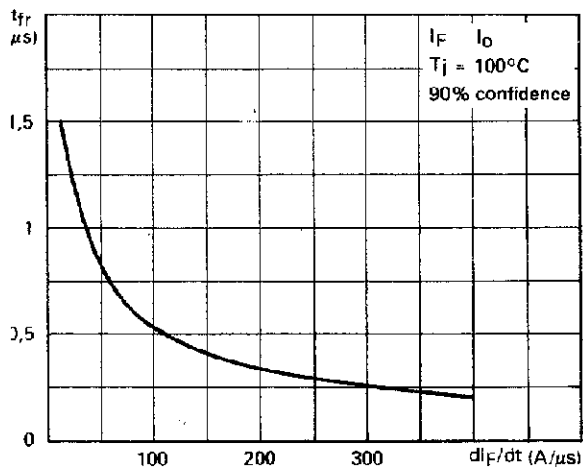


Fig.9 : Peak forward voltage versus di_F/dt .

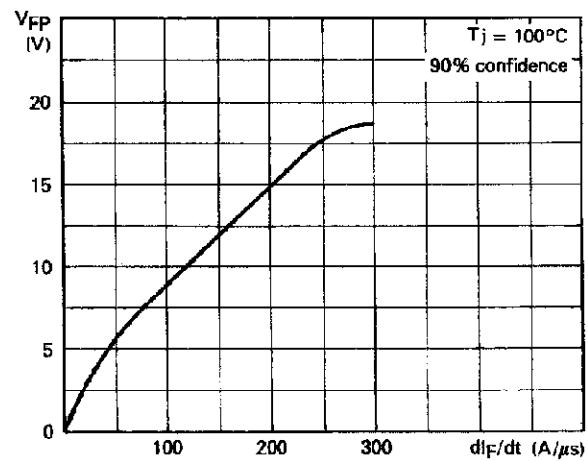


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

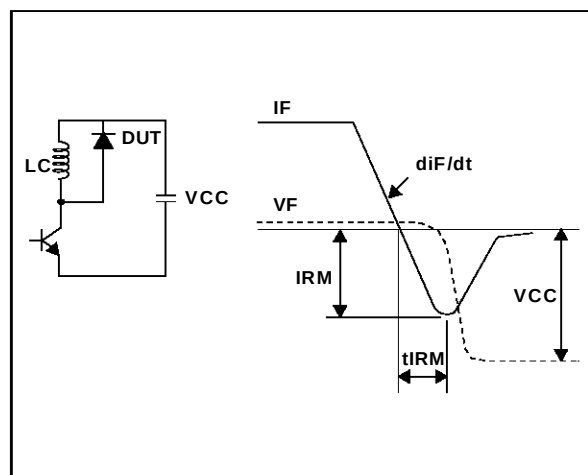


Fig.8 : Peak reverse current versus di_F/dt .

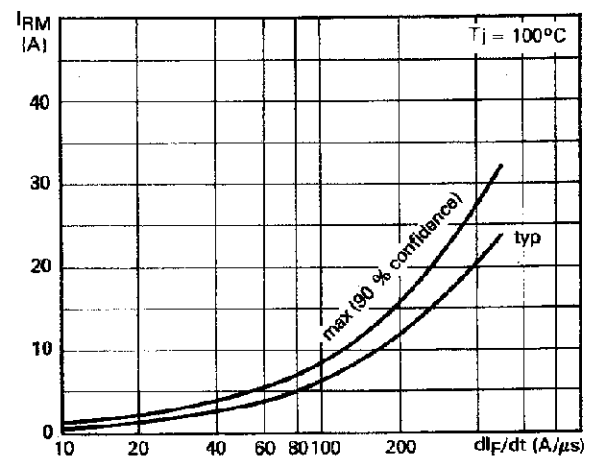


Fig.10 : Dynamic parameters versus junction temperature.

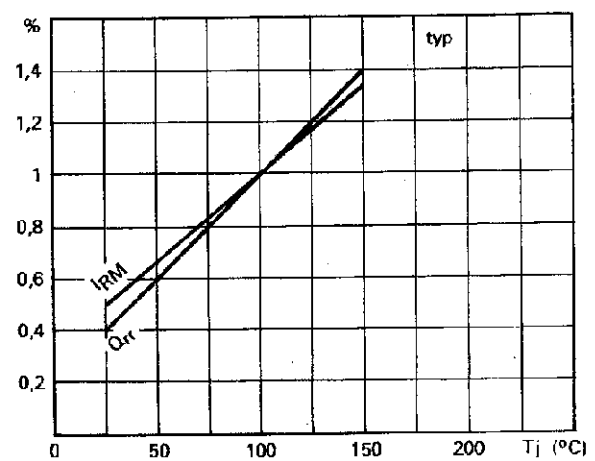
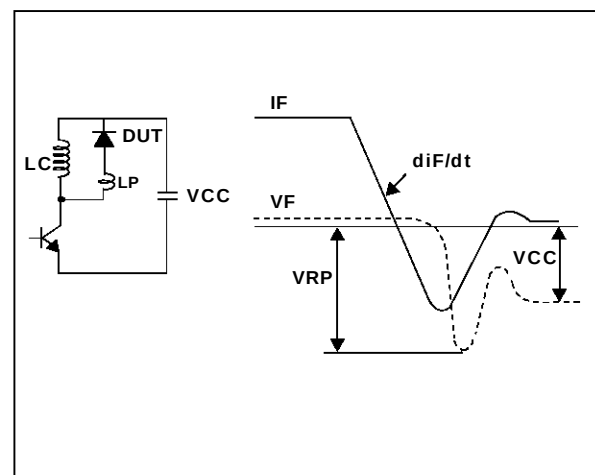
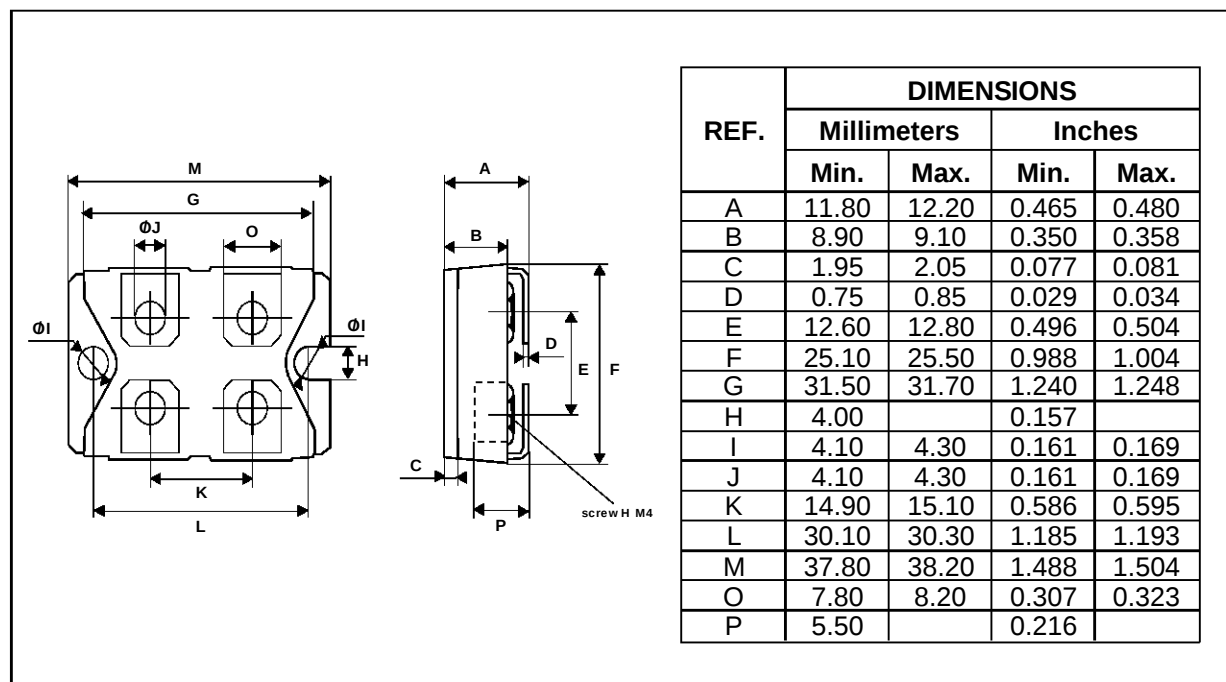


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



PACKAGE MECHANICAL DATA
ISOTOP


Cooling method : C

Marking : Type number

Weight : 28 g (without screws)

Electric isolation : 2500V_(RMS)

Capacitance : < 45 pF

Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

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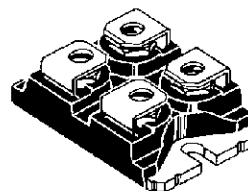
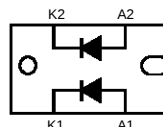
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED :
Insulating voltage = 2500 V_{RMS}
Capacitance = 55 pF

DESCRIPTION

Dual rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in ISOTOP™ this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ISOTOP
(Plastic)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
I _{F(RMS)}	RMS forward current		Per diode	150	A
I _{F(AV)}	Average forward current $\delta = 0.5$	T _c =110°C	Per diode	100	A
I _{FSM}	Surge non repetitive forward current	t _p =10ms sinusoidal	Per diode	1600	A
T _{stg} T _j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	BYV255-V				Unit
		50	100	150	200	
V _{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

TM : ISOTOP is a trademark of SGS-THOMSON Microelectronics.

BYV255V**THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	0.4	°C/W
		Total	0.25	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{th}(j-c)(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _{RRM}			100	μA
	T _j = 100°C				10	mA
V _F **	T _j = 125°C	I _F = 100 A			0.85	V
	T _j = 125°C	I _F = 200 A			1.00	
	T _j = 25°C	I _F = 200 A			1.15	

Pulse test : * tp = 5 ms, duty cycle < 2 %

** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.7 \times I_{F(AV)} + 0.0015 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A I _{rr} = 0.25A			55	ns
		I _F = 1A V _R = 30V dI _F /dt = -50A/μs			80	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F tr = 5 ns		10		ns
V _{FP}	T _j = 25°C	I _F = 1A tr = 5 ns		1.5		V

TURN-OFF SWITCHING CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _{RM}	T _j = 100°C	I _F = 100A L _p ≤ 0.05μH V _{CC} ≤ 0.6 V _{RRM}	dI _F /dt = -200A/μs		16	A
			dI _F /dt = -400A/μs	24		

Fig.1 : Average forward power dissipation versus average forward current.

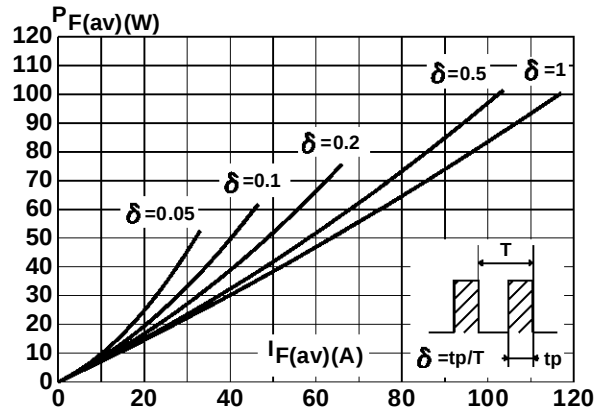


Fig.2 : Peak current versus form factor.

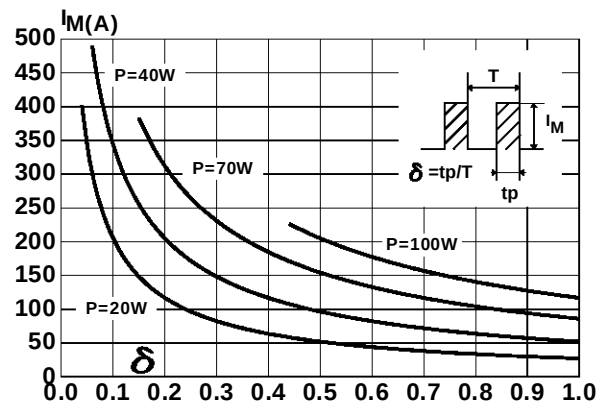


Fig.3 : Forward voltage drop versus forward current (maximum values).

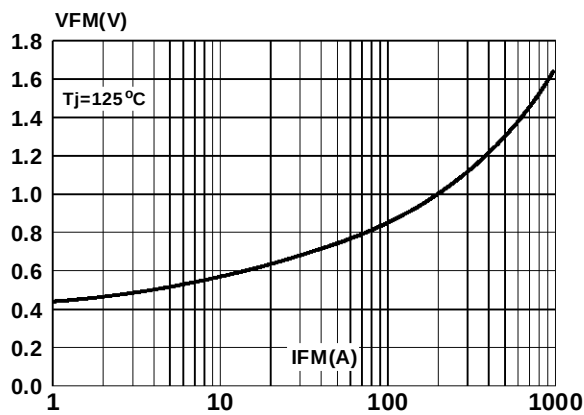


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

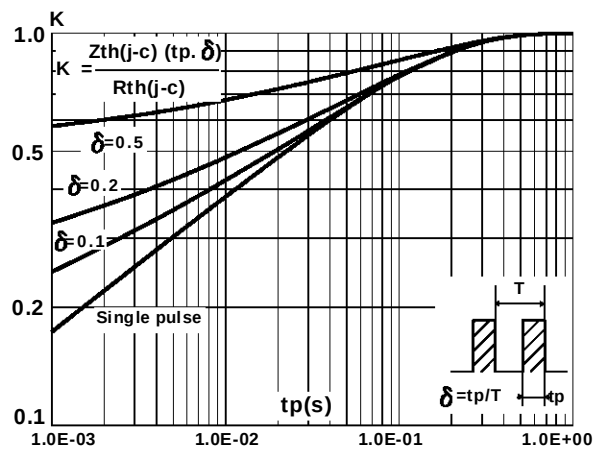


Fig.5 : Non repetitive surge peak forward current versus overload duration.

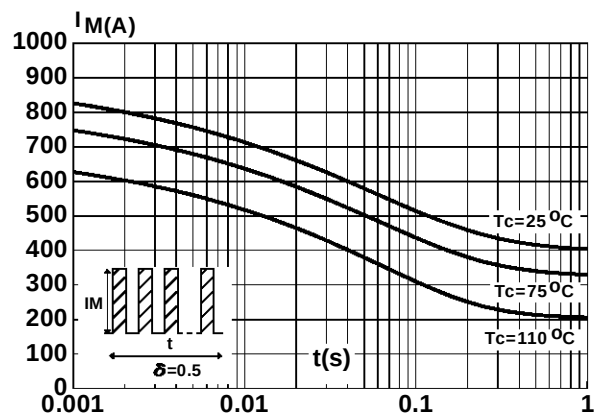


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)

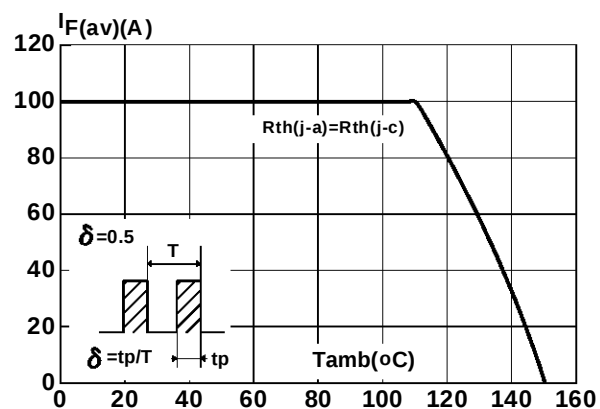


Fig.7 : Junction capacitance versus reverse voltage applied (Typical values).

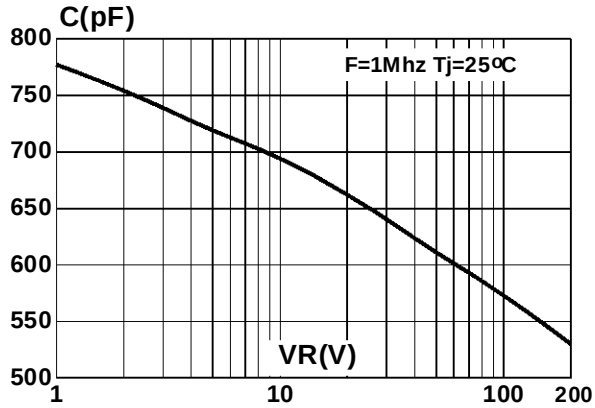


Fig.8 : Recovery charges versus dI_F/dt .

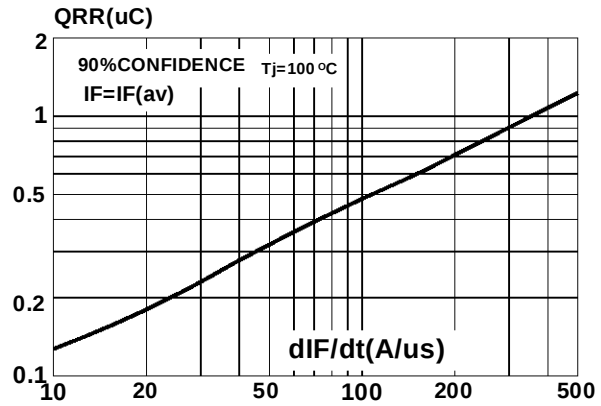


Fig.9 : Peak reverse current versus dI_F/dt .

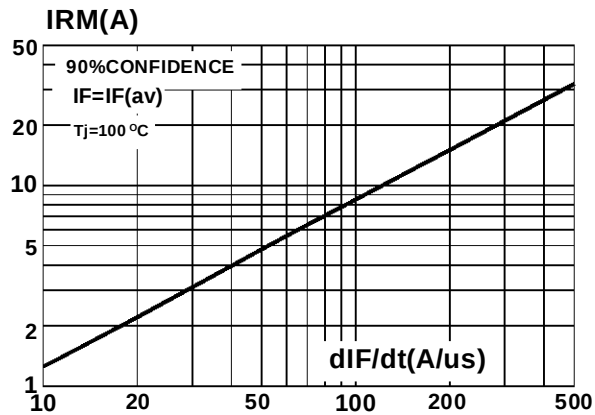
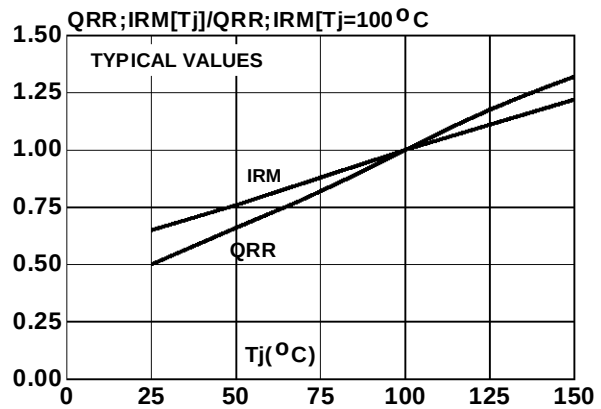
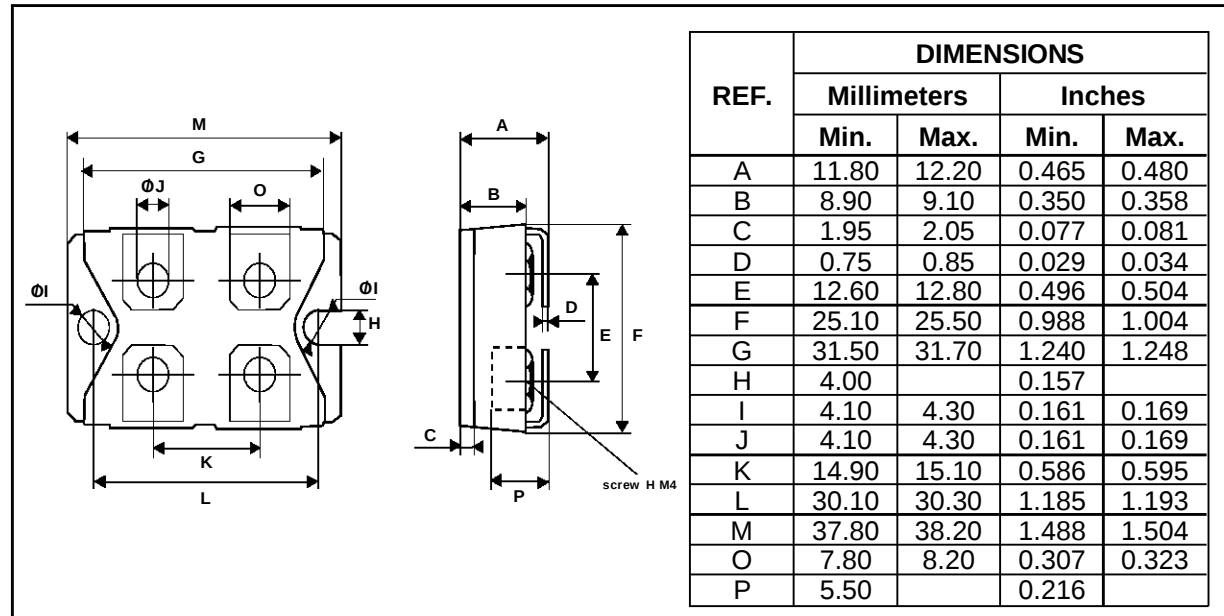


Fig.10 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
ISOTOP


Cooling method : C
 Marking : Type number
 Weight : 28 g

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HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

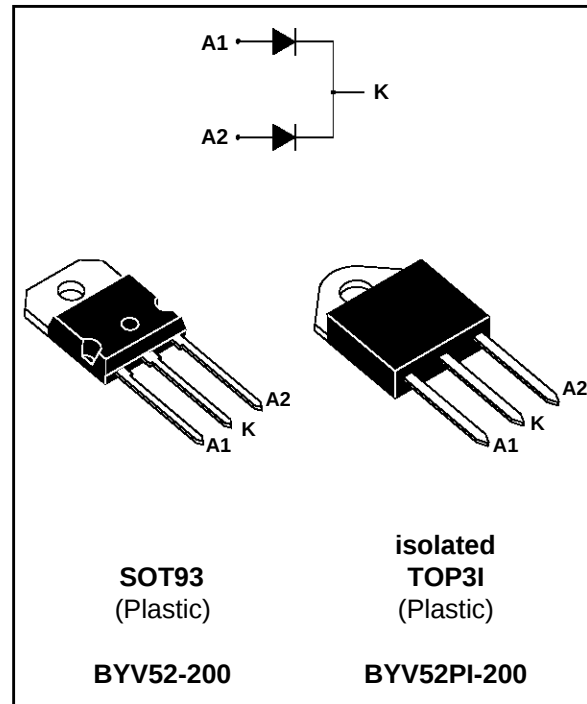
FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION TOP3I :
Insulating voltage = 2500 V DC
Capacitance = 12 pF

DESCRIPTION

Dual center tap rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in SOT93, or TOP3I this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter				Value	Unit
$I_{F(RMS)}$	RMS forward current		Per diode		50	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SOT93	$T_c = 110^\circ\text{C}$	Per diode	30	A
		TOP3I	$T_c = 90^\circ\text{C}$	Per diode	30	
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ms}$ sinusoidal	Per diode	500	A
T_{stg} T_j	Storage and junction temperature range				- 40 to + 150 - 40 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	BYV52-/PI-				Unit
		50	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

BYV52/PI**THERMAL RESISTANCE**

Symbol	Parameter			Value	Unit
Rth (j-c)	Junction to case	SOT93	Per diode	1.2	°C/W
			Total	0.75	
		TOP3I	Per diode	1.8	
			Total	1.2	
Rth (c)	Coupling	SOT93		0.3	°C/W
		TOP3I		0.6	

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)} (\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

ELECTRICAL CHARACTERISTICS (Per diode)**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R^*	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			25	μA
	$T_j = 100^\circ\text{C}$				2.5	mA
V_F^{**}	$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$			0.85	V
	$T_j = 125^\circ\text{C}$	$I_F = 40\text{ A}$			1.00	
	$T_j = 25^\circ\text{C}$	$I_F = 40\text{ A}$			1.15	

Pulse test : * $t_p = 5\text{ ms}$, duty cycle < 2 %

** $t_p = 380\mu\text{s}$, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.7 \times I_{F(AV)} + 0.0075 \times I_F^2 (\text{RMS})$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{A}$ $I_R = 1\text{A}$			35	ns
		$I_F = 1\text{A}$ $V_R = 30\text{V}$			50	
tfr	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$ $V_{FR} = 1.1 \times V_F$		10		ns
V_{FP}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$		1.5		V

Fig.1 : Average forward power dissipation versus average forward current.

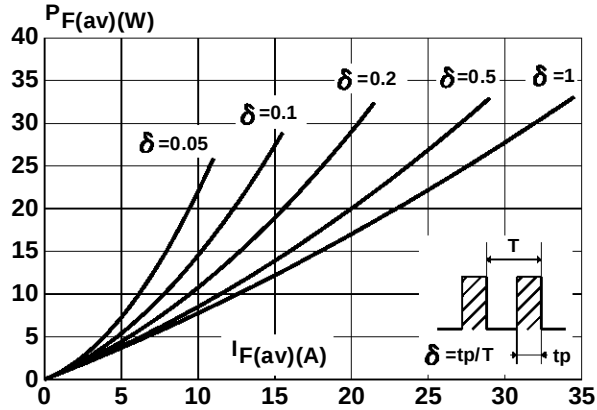


Fig.2 : Peak current versus form factor.

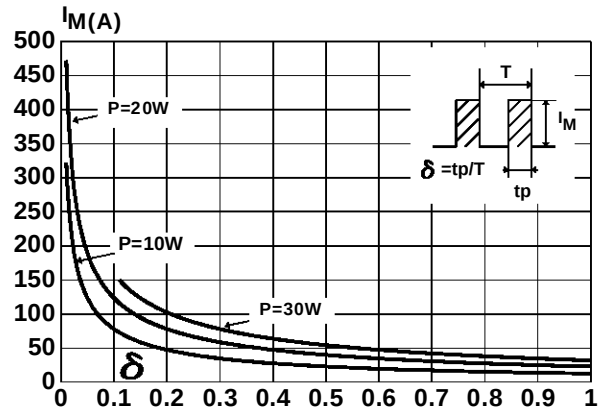


Fig.3 : Forward voltage drop versus forward current (maximum values).

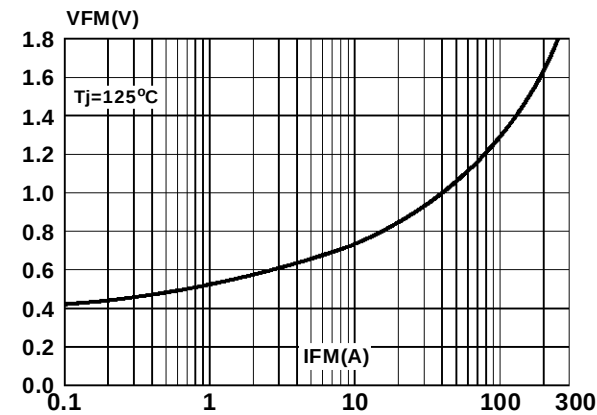


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

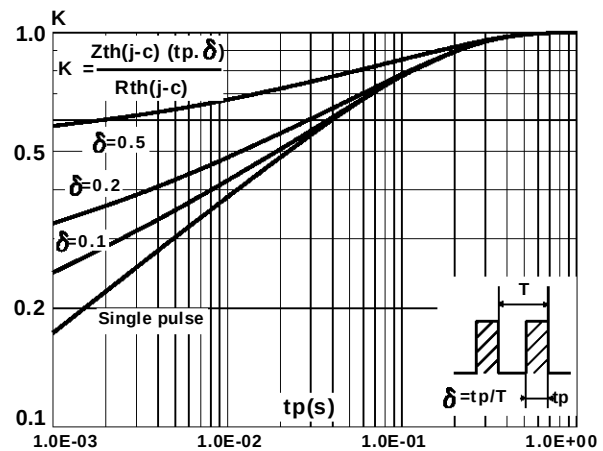


Fig.5 : Non repetitive surge peak forward current versus overload duration. (SOD93)

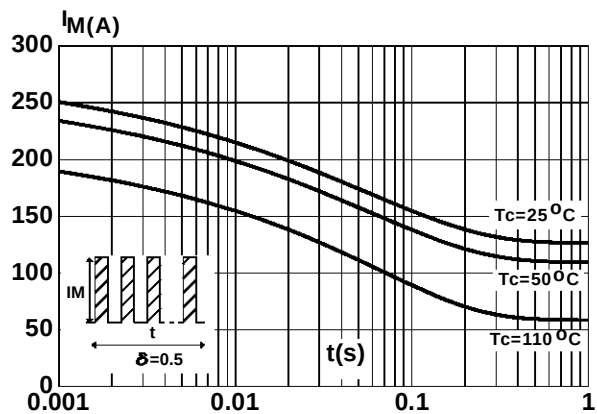


Fig.6 : Non repetitive surge peak forward current versus overload duration. (TOP3I)

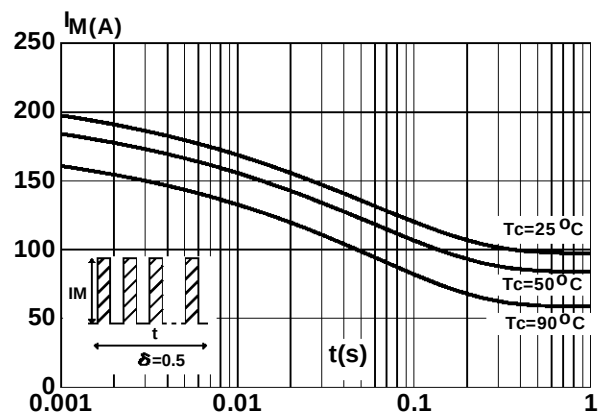


Fig.7 : Average current versus ambient temperature.
(duty cycle : 0.5) (SOD93)

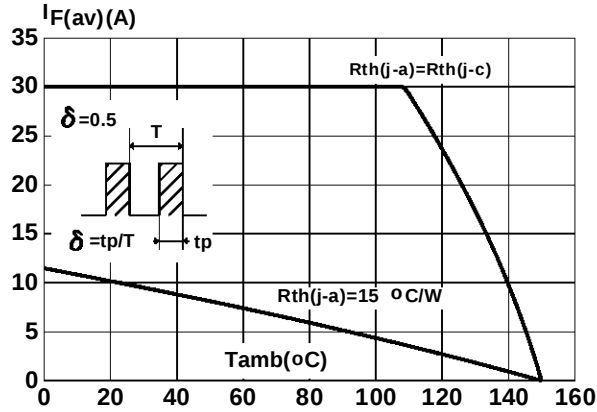


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TOP31)

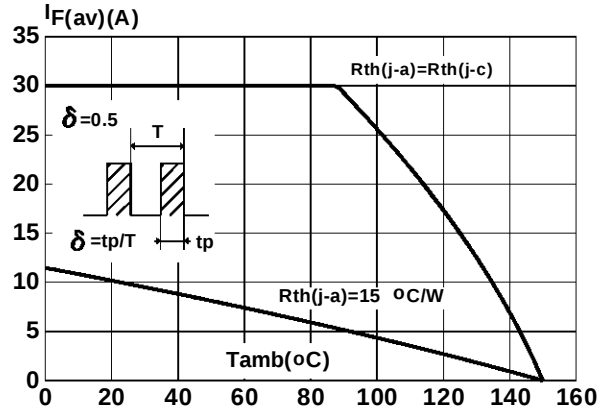


Fig.9 : Junction capacitance versus reverse voltage applied (Typical values).

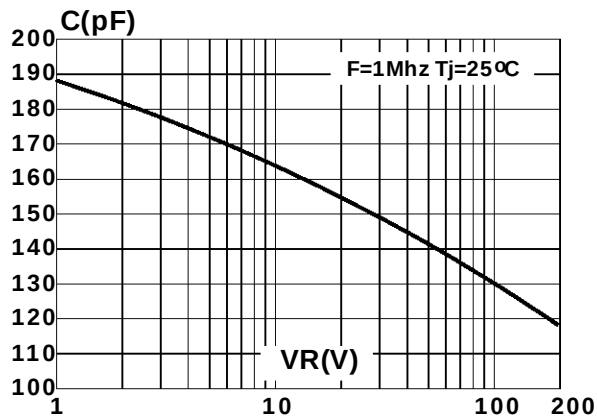


Fig.10 : Recovery charges versus dI_F/dt .

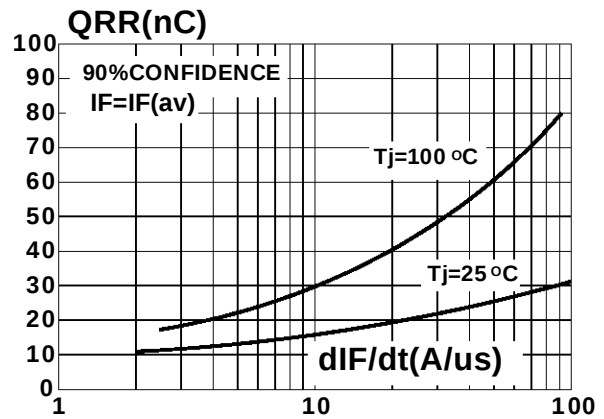


Fig.11 : Peak reverse current versus dI_F/dt .

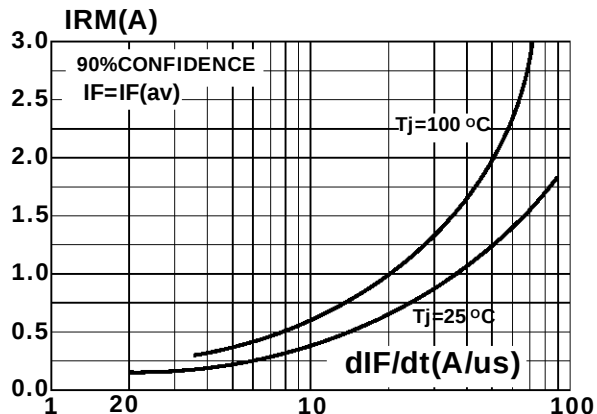
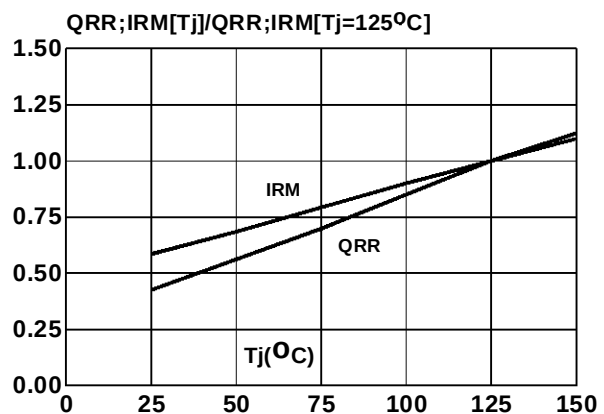


Fig.12 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
SOD93

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.7	15.2	0.578	0.596
B		16.2		0.637
C	31 typ		1.220 typ	
D	18 typ		0.708 typ	
E		12.2		0.480
G	3.95	4.15	0.155	0.163
H	4.7	4.9	0.185	0.193
I	4	4.1	0.157	0.161
J	1.9	2.1	0.062	0.075
L	0.5	0.78	0.019	0.030
M	2.5 typ		0.098 typ	
N	10.8	11.1	0.425	0.437
P	1.1	1.3	0.043	0.051

Cooling method : C
 Marking : Type number
 Weight : 5.3 g
 Recommended torque value : 0.8m.N
 Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA
TOP3I (isolated)

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	15.10	15.50	0.594	0.611
B	20.70	21.10	0.814	0.831
C	14.30	15.60	0.561	0.615
D	16.10	16.50	0.632	0.650
G	3.40	-	0.133	-
H	4.40	4.60	0.173	0.182
I	4.08	4.17	0.161	0.164
J	1.45	1.55	0.057	0.062
L	0.50	0.70	0.019	0.028
M	2.70	2.90	0.106	0.115
N	5.40	5.65	0.212	0.223
P	1.20	1.40	0.047	0.056

Cooling method : C
 Marking : Type number
 Weight : 4.7 g
 Recommended torque value : 0.8m.N
 Maximum torque value : 1.0m.N

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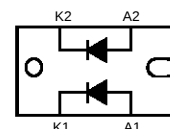
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

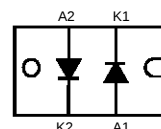
- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED :
 Insulating voltage = 2500 V_{RMS}
 Capacitance = 45 pF

DESCRIPTION

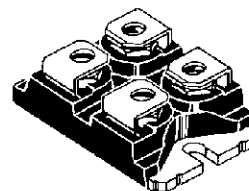
Dual rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in ISOTOP™ this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



BYV541V-200



BYV54V-200



ISOTOP
(Plastic)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
I _{F(RMS)}	RMS forward current		Per diode	100	A
I _{F(AV)}	Average forward current $\delta = 0.5$	T _c =90°C	Per diode	50	A
I _{FSM}	Surge non repetitive forward current	t _p =10ms sinusoidal	Per diode	1000	A
T _{stg} T _j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	BYV54V / BYV541V				Unit
		50	100	150	200	
V _{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

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BYV54V / BYV541V**THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.2	°C/W
		Total	0.85	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{th}(j-c)(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R^*	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			50	μA
	$T_j = 100^\circ\text{C}$				5	mA
V_F^{**}	$T_j = 125^\circ\text{C}$	$I_F = 50\text{ A}$			0.85	V
	$T_j = 125^\circ\text{C}$	$I_F = 100\text{ A}$			1.00	
	$T_j = 25^\circ\text{C}$	$I_F = 100\text{ A}$			1.15	

Pulse test : * $t_p = 5\text{ ms}$, duty cycle < 2 %

** $t_p = 380\text{ }\mu\text{s}$, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.7 \times I_{F(AV)} + 0.003 \times I_F^2 (RMS)$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{ A}$ $I_{rr} = 0.25\text{ A}$ $I_R = 1\text{ A}$			40	ns
		$I_F = 1\text{ A}$ $dI_F/dt = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$			60	
tfr	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$ $t_r = 5\text{ ns}$ $V_{FR} = 1.1 \times V_F$		10		ns
V_{FP}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$ $t_r = 5\text{ ns}$		1.5		V

Fig.1 : Average forward power dissipation versus average forward current.

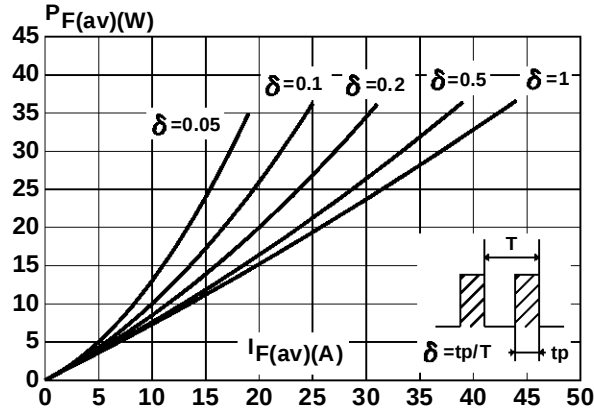


Fig.2 : Peak current versus form factor.

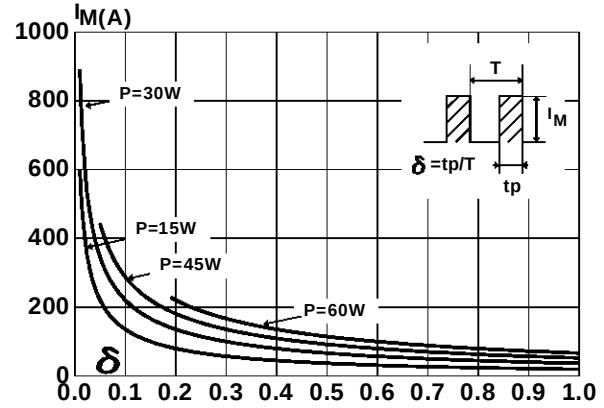


Fig.3 : Forward voltage drop versus forward current (maximum values).

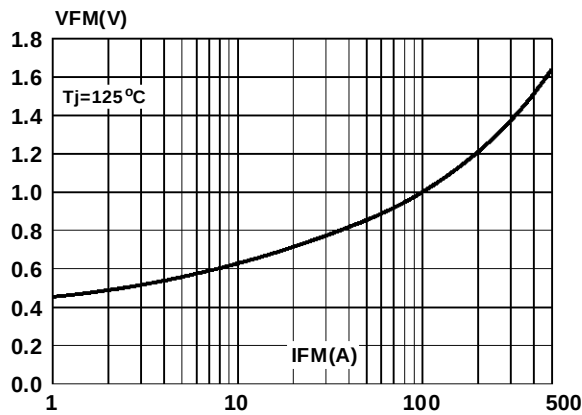


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

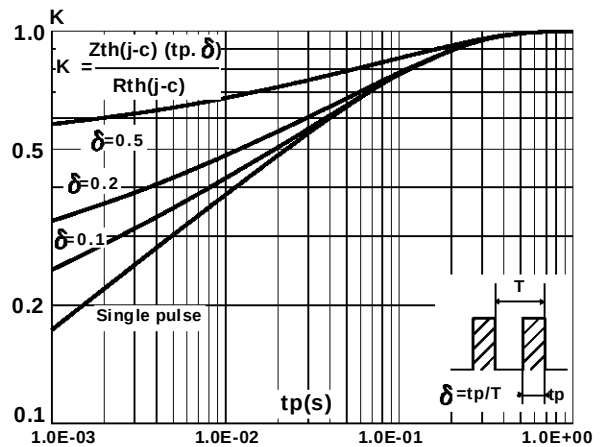


Fig.5 : Non repetitive surge peak forward current versus overload duration.

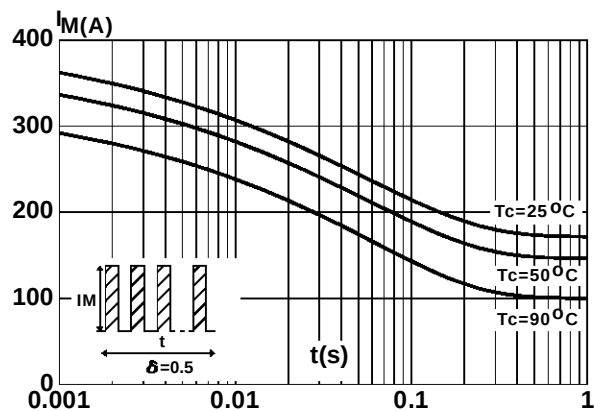


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)

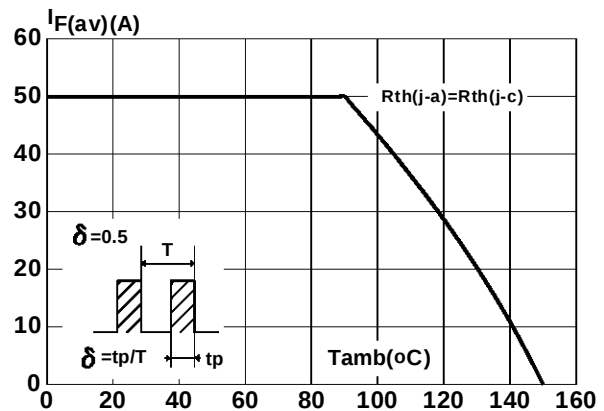


Fig.7 : Junction capacitance versus reverse voltage applied (Typical values).

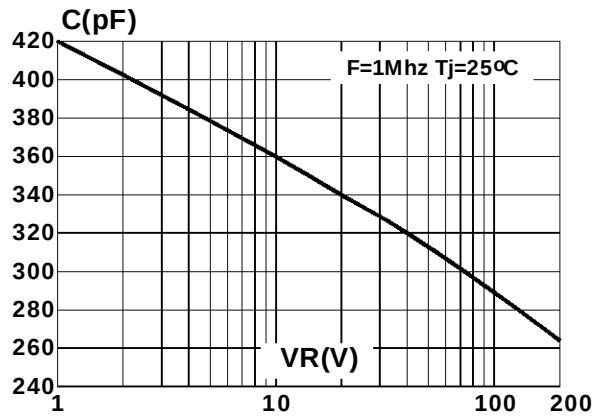


Fig.8 : Recovery charges versus dI_F/dt .

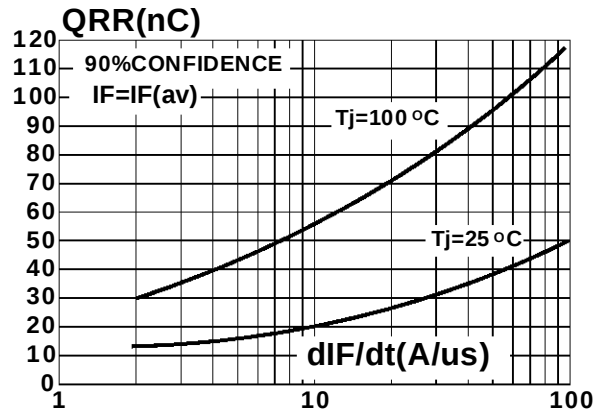


Fig.9 : Peak reverse current versus dI_F/dt .

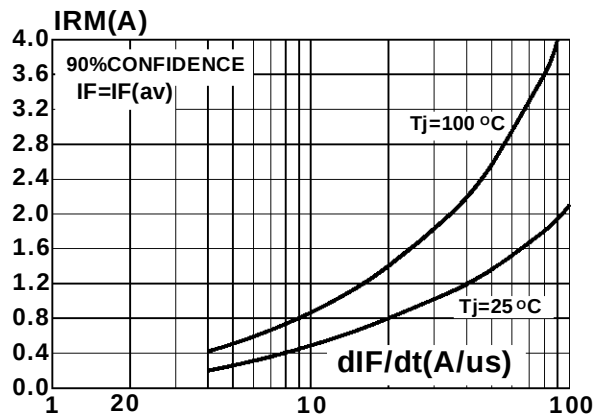
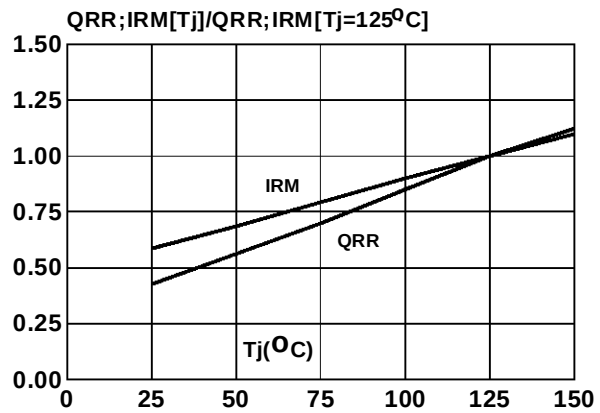
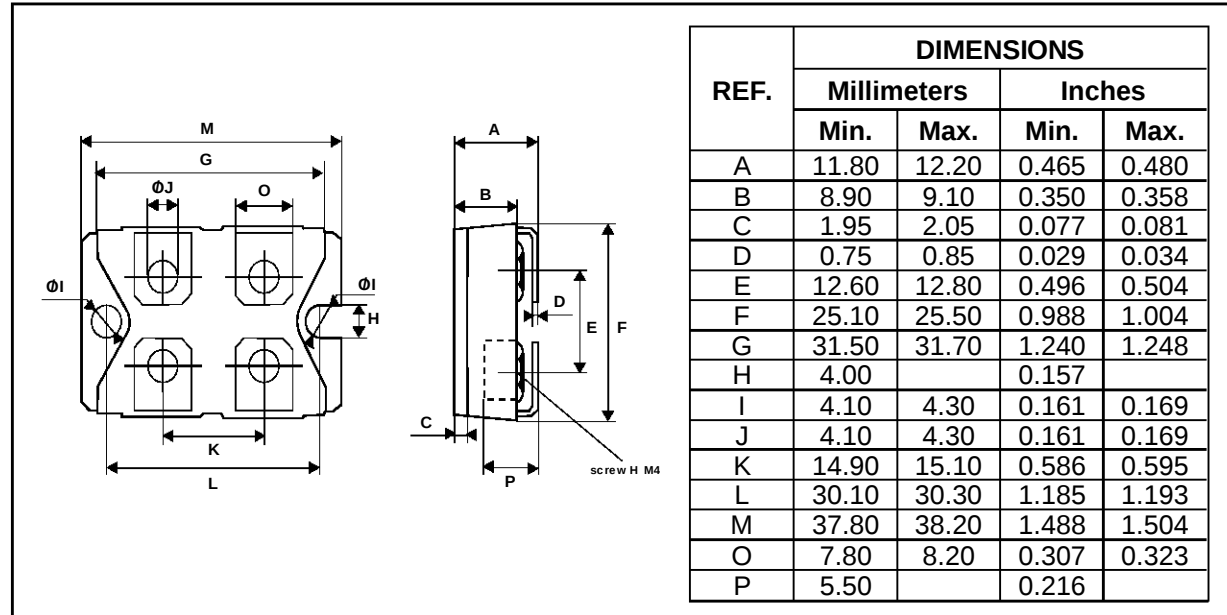


Fig.10 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA **ISOTOP**



Cooling method : C
 Marking : Type number
 Weight : 28 g

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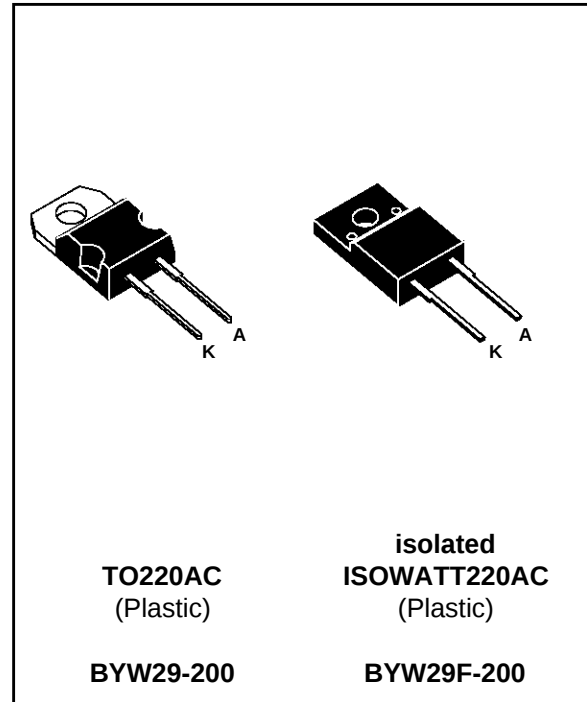
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AC):
Insulating voltage = 2000 V DC
Capacitance = 12 pF

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC or ISOWATT220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{F(RMS)}$	RMS forward current			16	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO220AC	$T_c = 120^\circ\text{C}$	8	A
		ISOWATT220AC	$T_c = 100^\circ\text{C}$	8	
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ms}$ sinusoidal	80	A
T_{stg} T_j	Storage and junction temperature range			- 65 to + 150 - 65 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	BYW29-(F)				Unit
		50	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

BYW29(F)

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	TO220AC	2.8	°C/W
		ISOWATT220AC	5.0	

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _{RRM}			10	μA
	T _j = 100°C				0.6	mA
V _F **	T _j = 125°C	I _F = 5 A			0.85	V
	T _j = 125°C	I _F = 10 A			1.05	
	T _j = 25°C	I _F = 10 A			1.15	

Pulse test : * tp = 5 ms, duty cycle < 2 %

** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.040 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A			25	ns
		I _F = 1A V _R = 30V			35	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F		15		ns
V _{FP}	T _j = 25°C	I _F = 1A tr = 10 ns		2		V

Fig.1 : Average forward power dissipation versus average forward current.

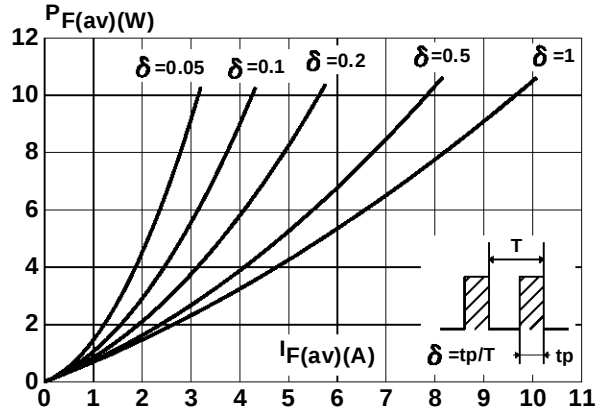


Fig.2 : Peak current versus form factor.

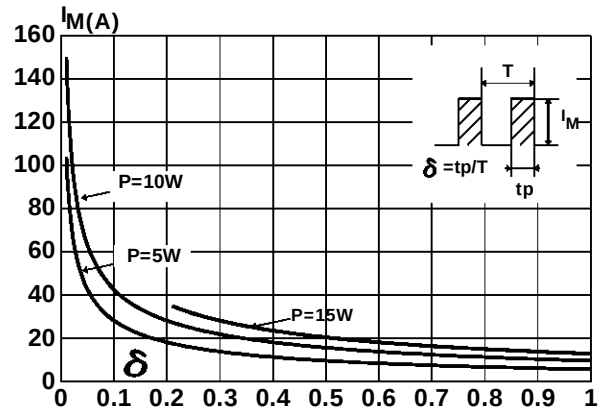


Fig.3 : Forward voltage drop versus forward current (maximum values).

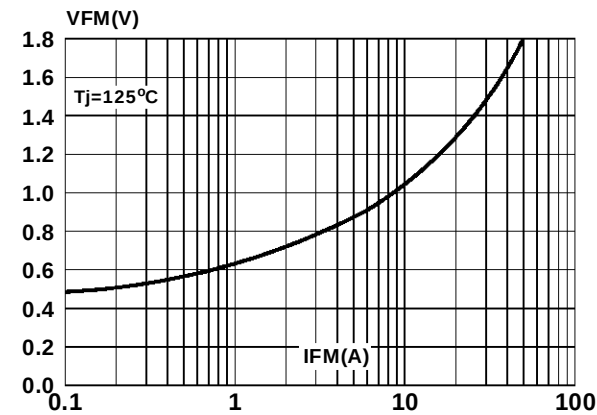


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration. (TO220AC)

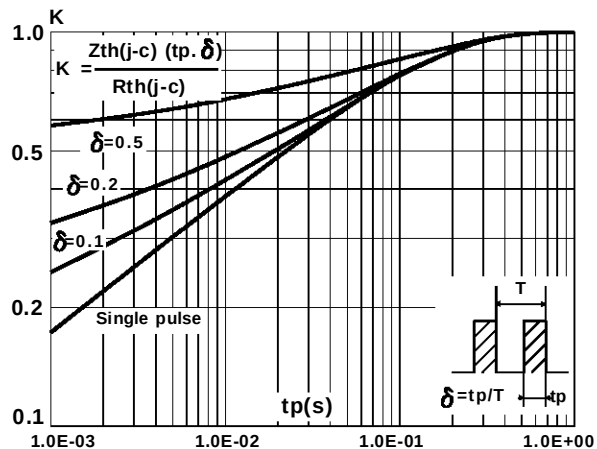
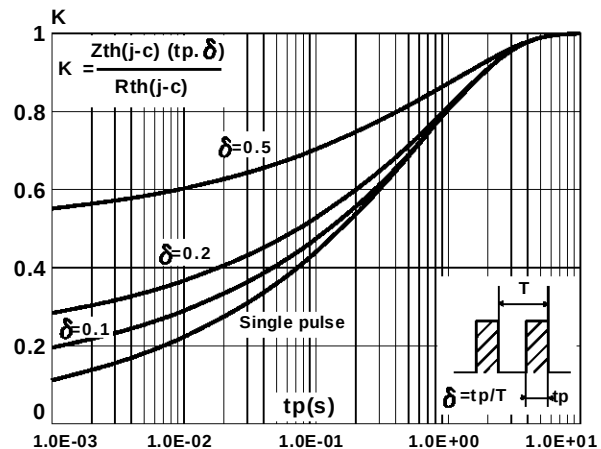


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AC)



BYW29(F)

Fig.6 : Non repetitive surge peak forward current versus overload duration.
(TO220AC)

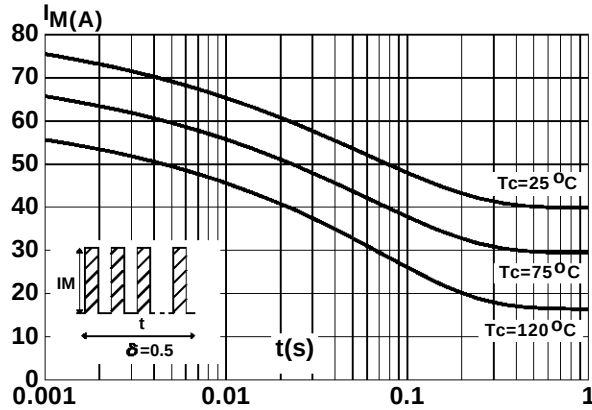


Fig.7 : Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AC)

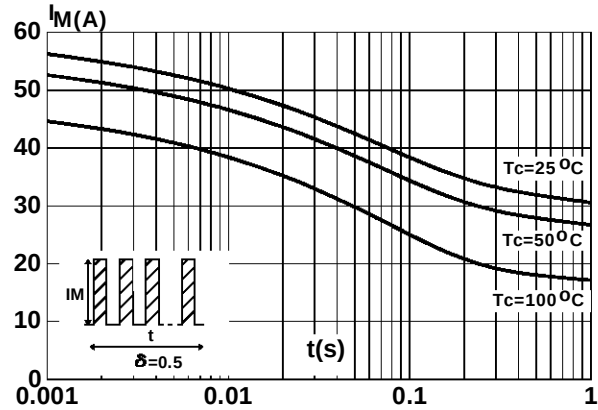


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TO220AC)

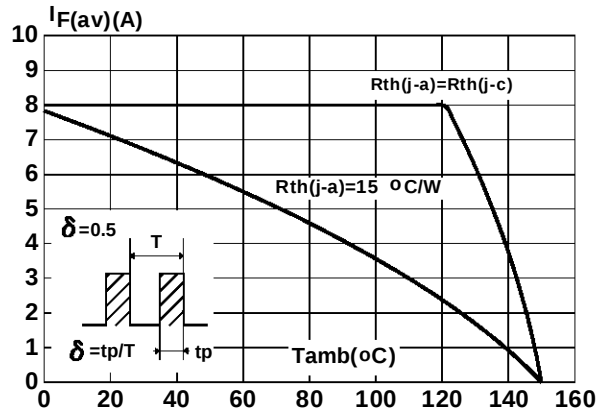


Fig.9 : Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AC)

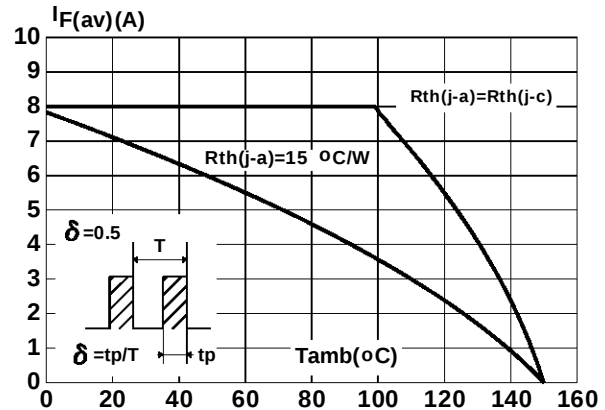


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

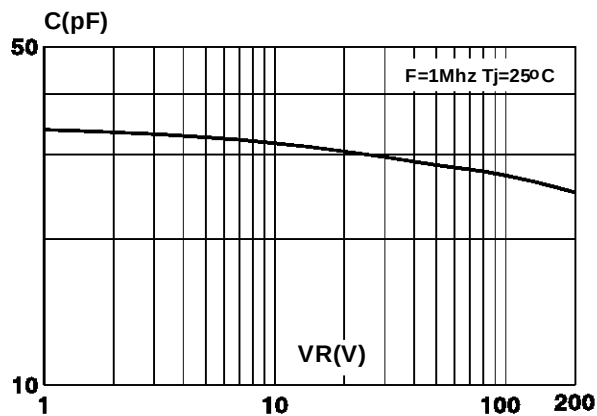


Fig.11 : Recovery charges versus dI_F/dt .

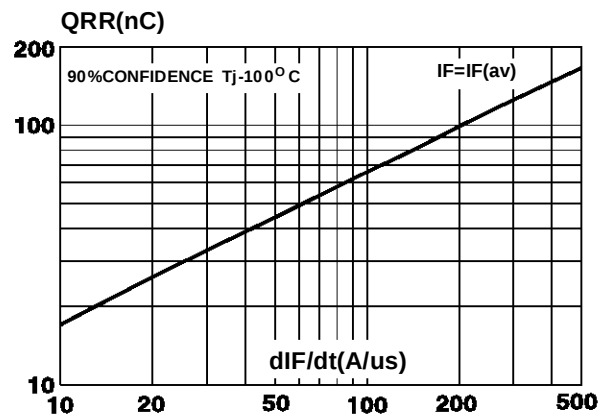


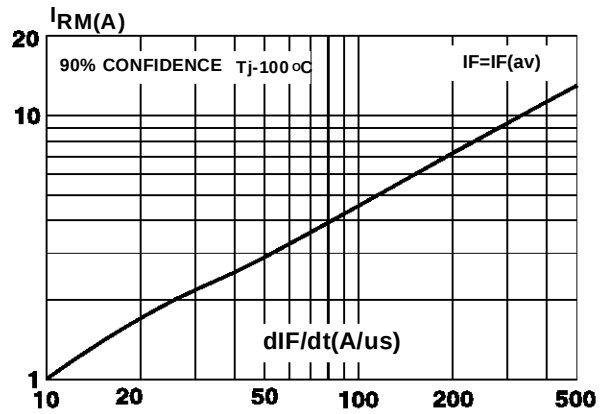
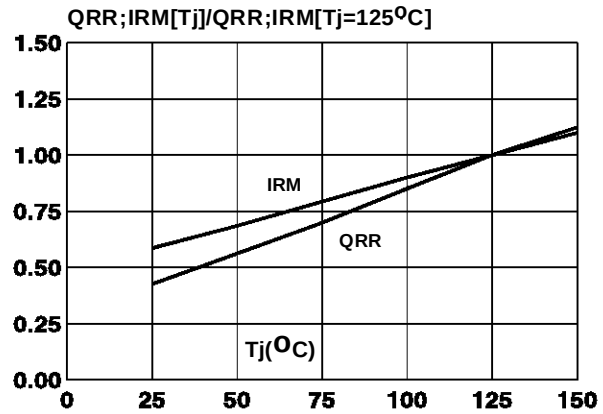
Fig.12 : Peak reverse current versus dI_F/dt .

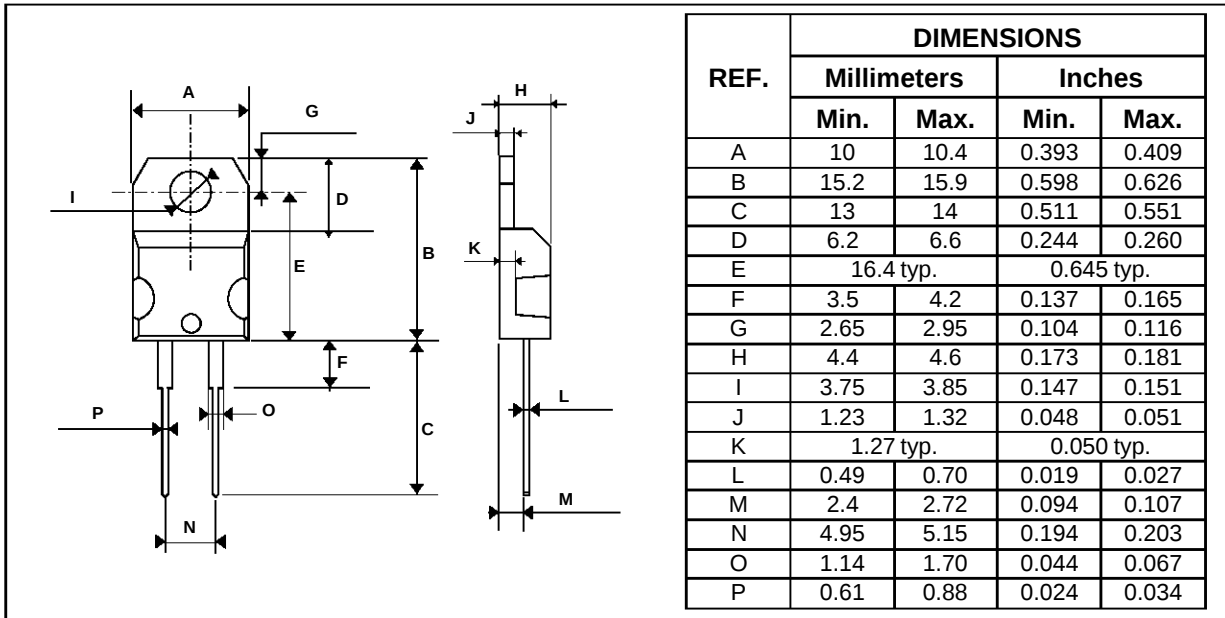
Fig.13 : Dynamic parameters versus junction temperature.



BYW29(F)

PACKAGE MECHANICAL DATA

TO220AC (JEDEC outline)



Cooling method : C

Marking : Type number

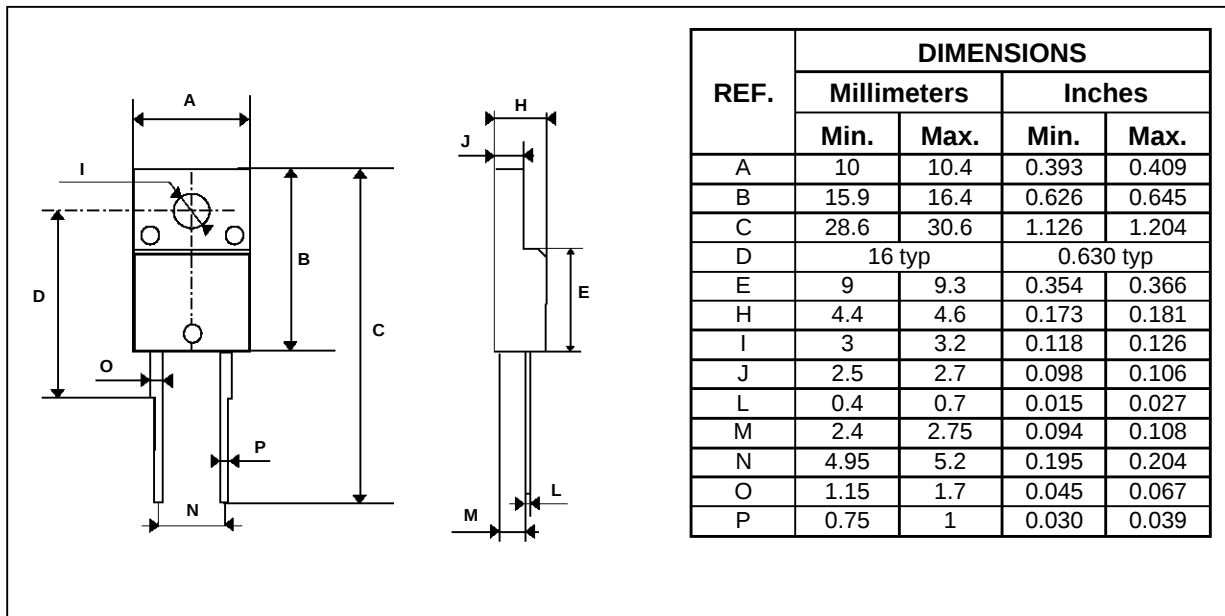
Weight : 1.9 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA

ISOWATT220AC (JEDEC outline)



Cooling method : C

Marking : Type number

Weight : 2 g

Recommended torque value : 0.55m.N

Maximum torque value : 0.70m.N

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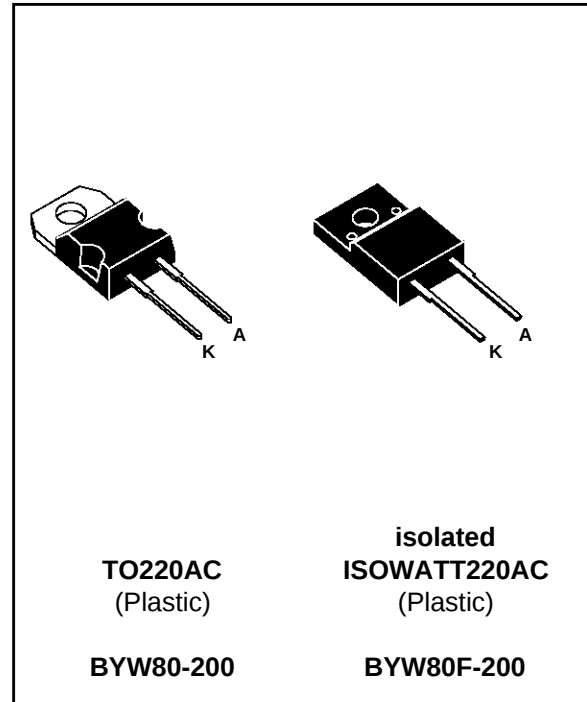
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AC):
Insulating voltage = 2000 V DC
Capacitance = 12 pF

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC, or ISOWATT220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{F(RMS)}$	RMS forward current			20	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO220AC	$T_c = 120^\circ\text{C}$	10	A
		ISOWATT220AC	$T_c = 95^\circ\text{C}$	10	
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ms}$ sinusoidal	100	A
T_{stg} T_j	Storage and junction temperature range			- 65 to + 150 - 65 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	BYW80-(F)				Unit
		50	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

BYW80(F)

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	TO220AC	2.5	°C/W
		ISOWATT220AC	4.7	

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _{RRM}			10	μA
	T _j = 100°C				1	mA
V _F **	T _j = 125°C	I _F = 7 A			0.85	V
	T _j = 125°C	I _F = 15 A			1.05	
	T _j = 25°C	I _F = 15 A			1.15	

Pulse test : * tp = 5 ms, duty cycle < 2 %

** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.027 \times I_F^2_{(RMS)}$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A			25	ns
		I _F = 1A V _R = 30V			35	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 × V _F		15		ns
V _{FP}	T _j = 25°C	I _F = 1A		2		V

Fig.1 : Average forward power dissipation versus average forward current.

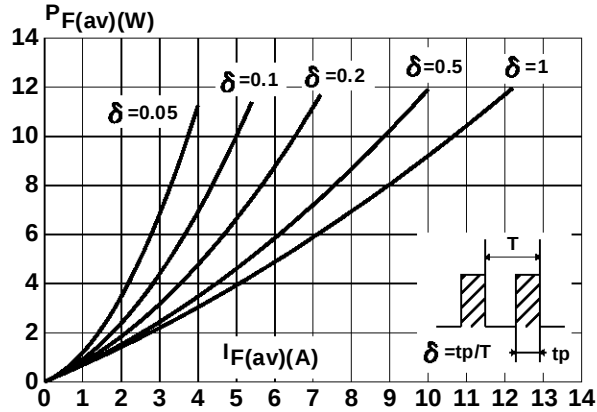


Fig.2 : Peak current versus form factor.

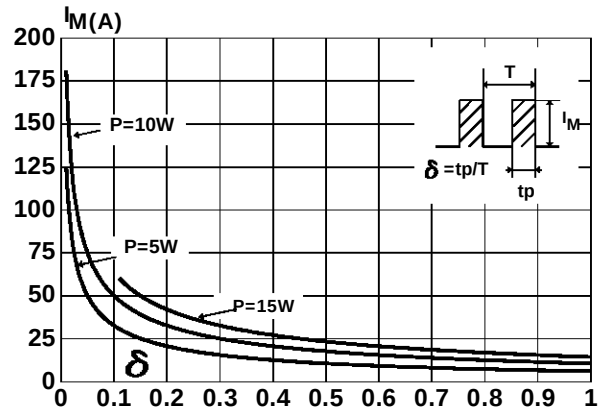


Fig.3 : Forward voltage drop versus forward current (maximum values).

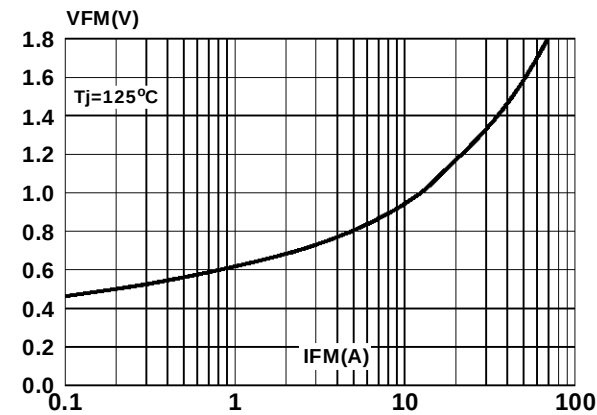


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration. (TO220AC)

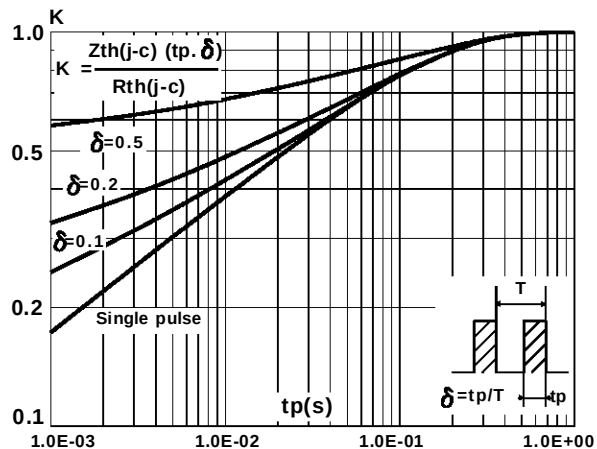
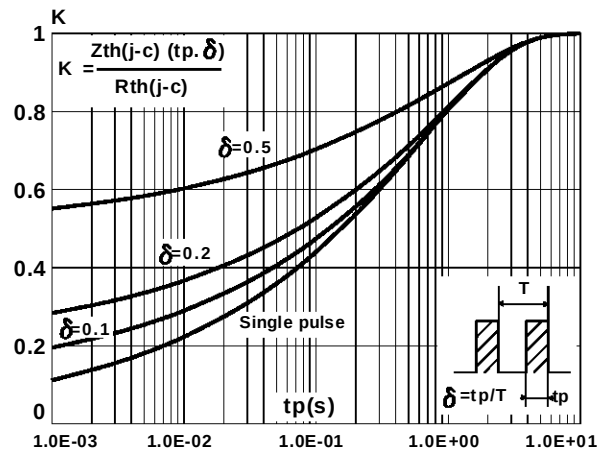


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AC)



BYW80(F)

Fig.6 : Non repetitive surge peak forward current versus overload duration.
(TO220AC)

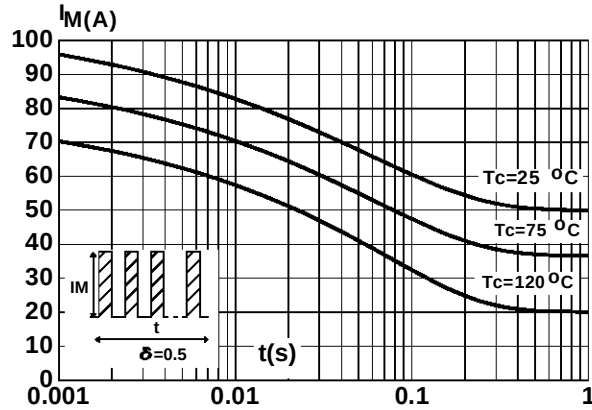


Fig.7 : Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AC)

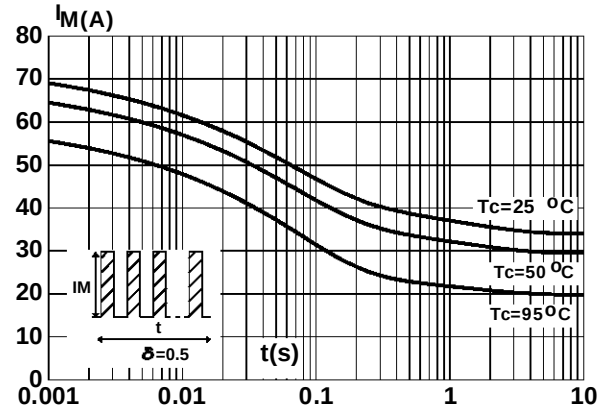


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TO220AC)

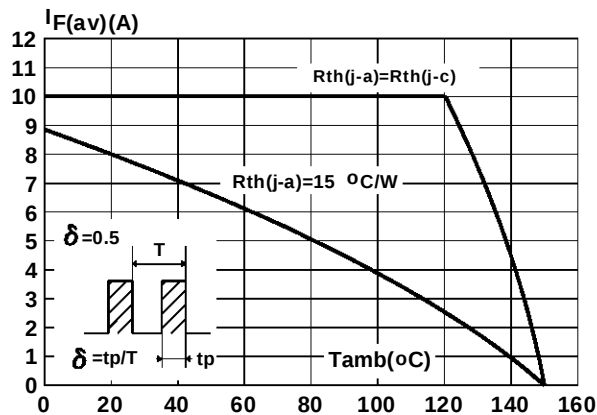


Fig.9 : Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AC)

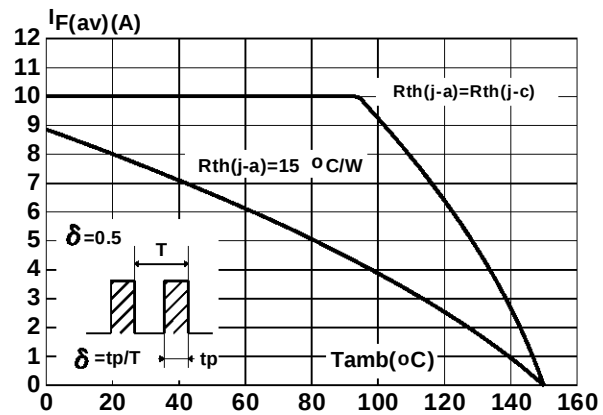


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

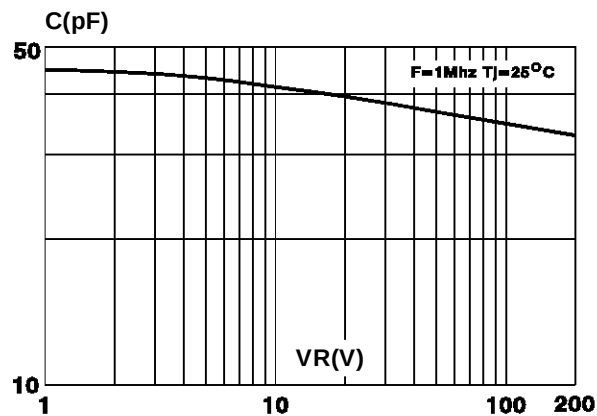


Fig.11 : Recovery charges versus dI_F/dt .

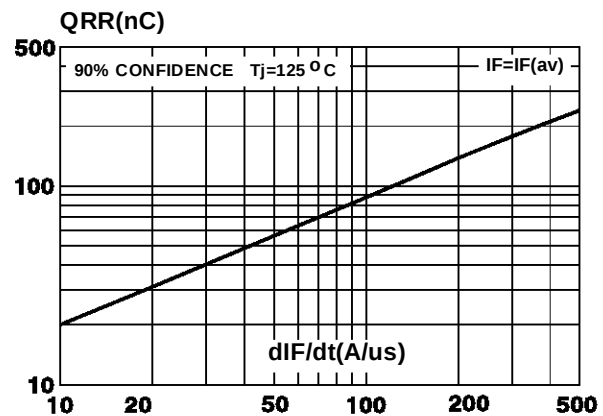


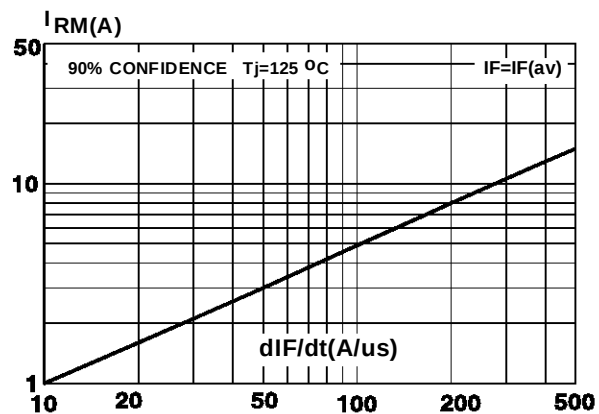
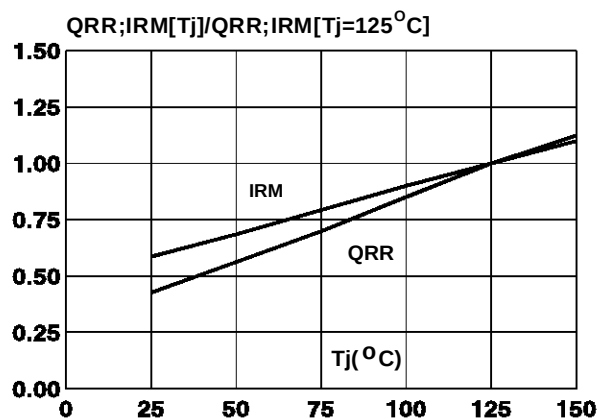
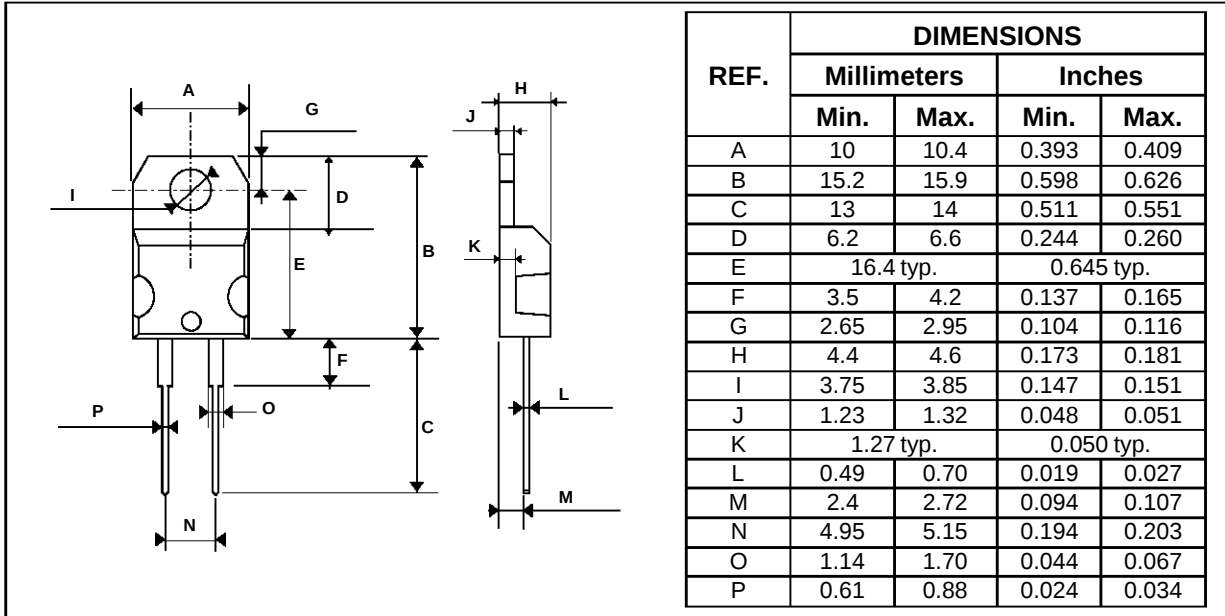
Fig.12 : Peak reverse current versus dI_F/dt .

Fig.13 : Dynamic parameters versus junction temperature.



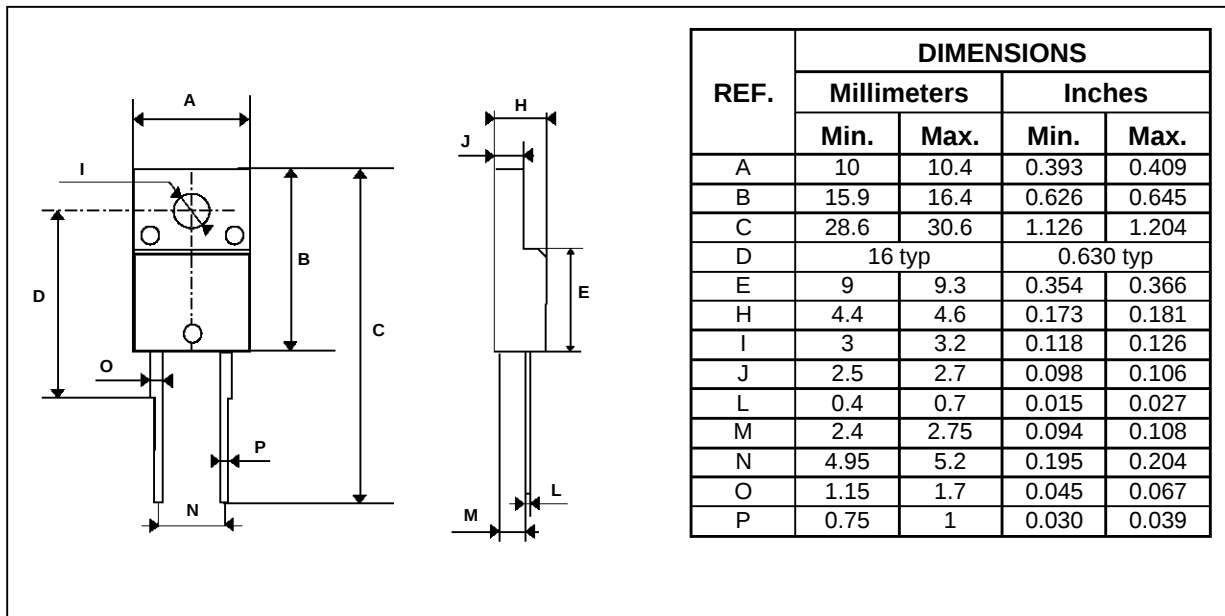
BYW80(F)

PACKAGE MECHANICAL DATA TO220AC (JEDEC outline)



Cooling method : C
Marking : Type number
Weight : 1.9 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA ISOWATT220AC (JEDEC outline)



Cooling method : C
Marking : Type number
Weight : 2 g
Recommended torque value : 0.55m.N
Maximum torque value : 0.70m.N

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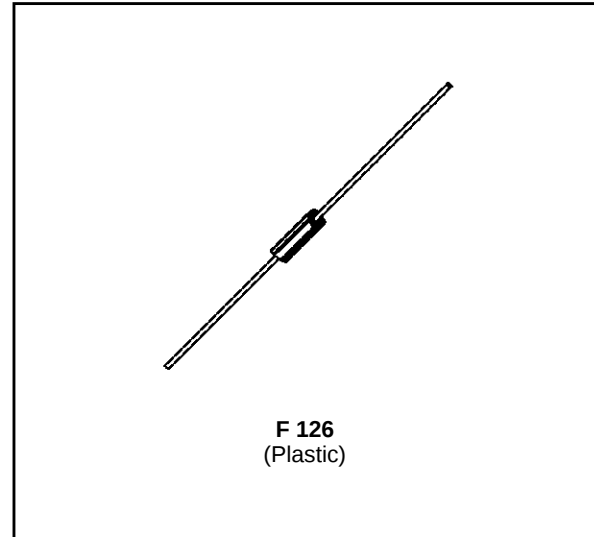
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HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIMES
- HIGH SURGE CURRENT
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF t_{rr} AND I_{RM} AT 100°C UNDER USERS CONDITIONS



DESCRIPTION

Low voltage drop and rectifier suited for switching mode base drive and transistor circuits.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	50	A
$I_F (AV)$	Average Forward Current*	$T_a = 90^\circ C$ $\delta = 0.5$	1.5	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	50	A
P_{tot}	Power Dissipation*	$T_a = 90^\circ C$	1.3	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C
T_L	Maximum Lead Temperature for Soldering during 10s at 4mm from Case		230	°C

Symbol	Parameter	BYW 100-				Unit
		50	100	150	200	
V_{RRM}	Repetitive Peak Reverse Voltage	50	100	150	200	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	55	110	165	220	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient*	45	°C/W

* On infinite heatsink with 10mm lead length.

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			10	μA
	$T_J = 100^\circ\text{C}$				0.5	mA
V_F	$T_J = 25^\circ\text{C}$	$I_F = 4.5\text{A}$			1.2	V
	$T_J = 100^\circ\text{C}$	$I_F = 1.5\text{A}$			0.85	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_J = 25^\circ\text{C}$ $V_R = 30\text{V}$	$I_F = 1\text{A}$ See figure 10	$di_F/dt = -50\text{A}/\mu\text{s}$			35	ns
Q_{rr}	$T_J = 25^\circ\text{C}$ $V_R \leq 30\text{V}$	$I_F = 1\text{A}$	$di_F/dt = -20\text{A}/\mu\text{s}$		10		nC
t_{fr}	$T_J = 25^\circ\text{C}$ Measured at $1.1 \times V_F$	$I_F = 1\text{A}$	$t_r = 10\text{ns}$		30		ns
V_{FP}	$T_J = 25^\circ\text{C}$	$I_F = 1\text{A}$	$t_r = 10\text{ns}$		5		V

To evaluate the conduction losses use the following equations:

$$V_F = 0.66 + 0.075 I_F$$

$$P = 0.06 \times I_{F(AV)} + 0.075 I_F^2(RMS)$$

Figure 1. Maximum average power dissipation versus average forward current.

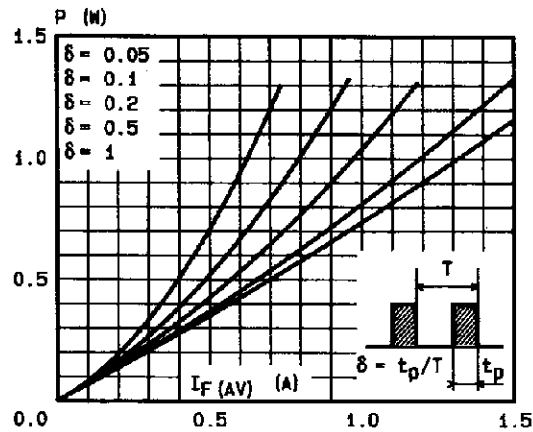


Figure 2. Average forward current versus ambient temperature.

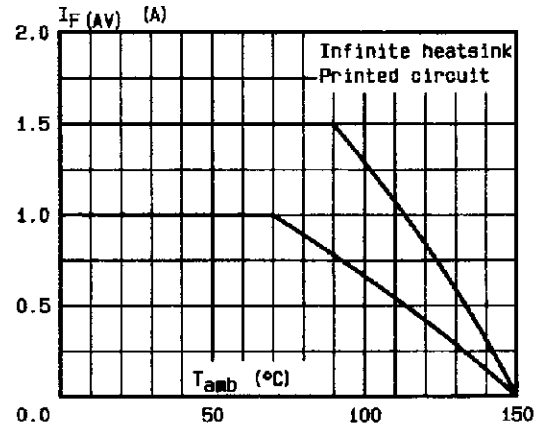


Figure 3. Thermal resistance versus lead length.

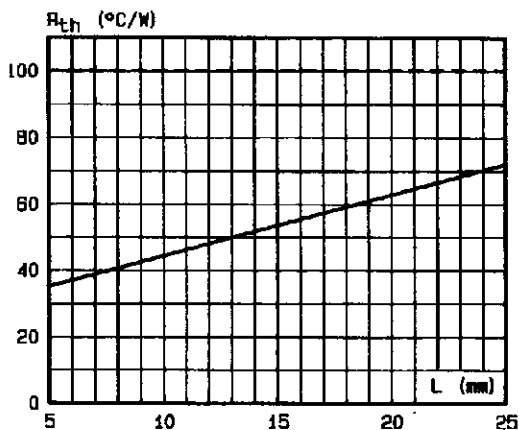
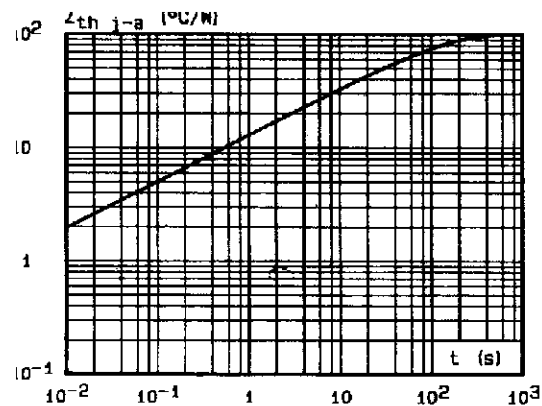


Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration ($L = 10$ mm).



Mounting n°1
INFINITE HEATSINK

Mounting n°2
PRINTED CIRCUIT

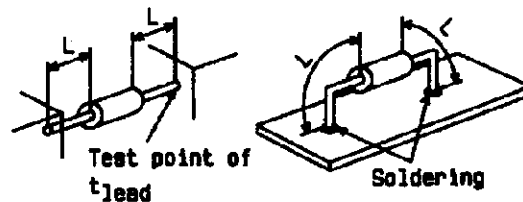


Figure 5. Peak forward current versus peak forward voltage drop (maximum values).

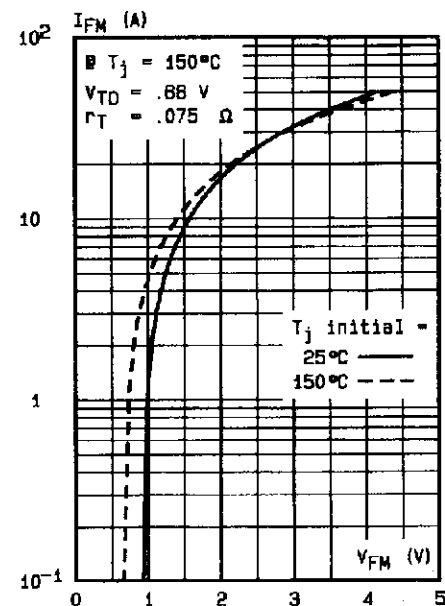


Figure 6. Capacitance versus reverse voltage applied.

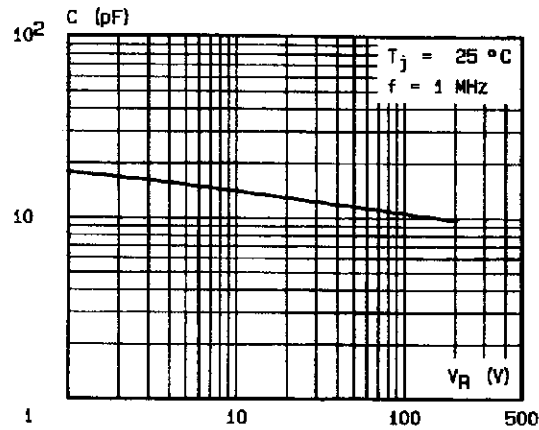


Figure 7. Recovery time versus di_F/dt .

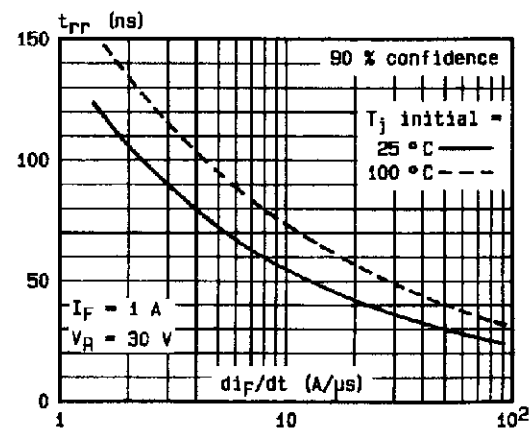


Figure 8. Peak reverse current versus di_F/dt .

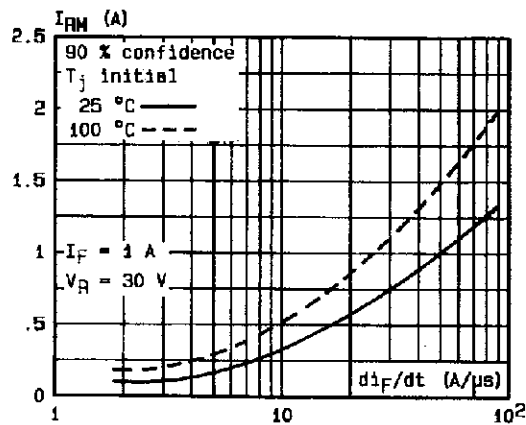


Figure 9. Dynamic parameters versus junction temperature.

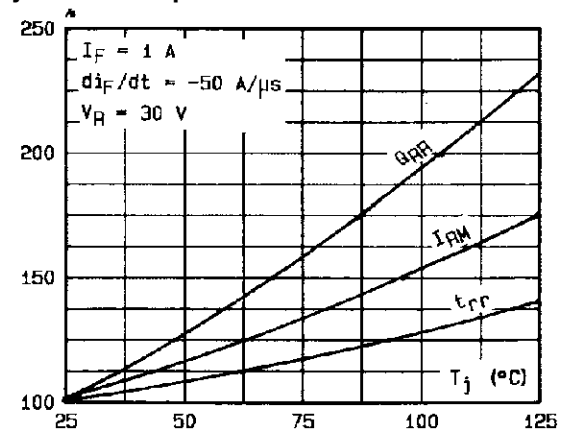
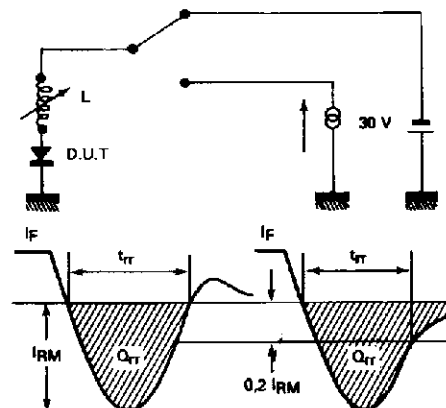
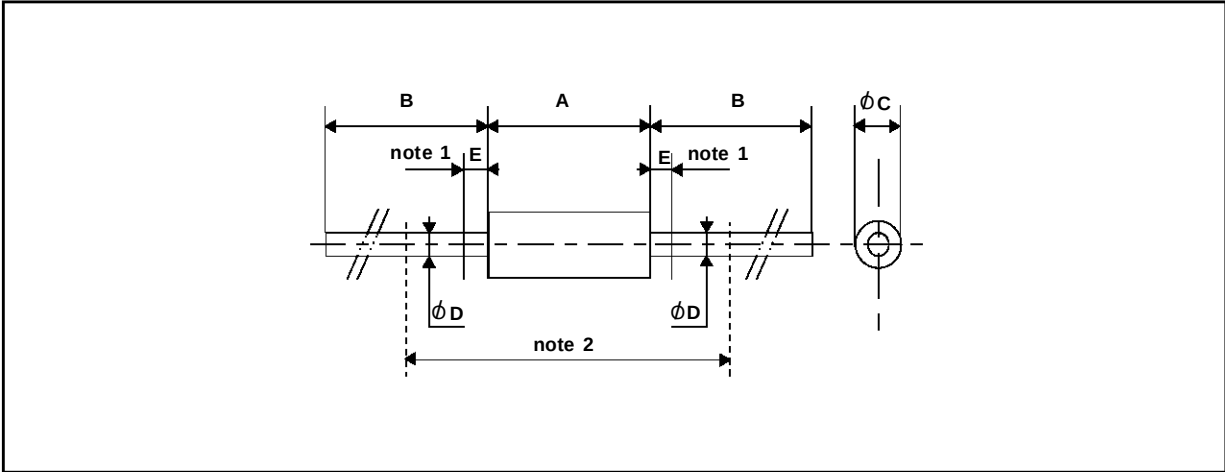


Figure 10. Measurement of t_{rr} (Fig. 7) and I_{RM} (Fig. 8).



PACKAGE MECHANICAL DATA

F 126 (Plastic)



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A	6.05	6.35	0.238	0.250	1 - The lead diameter Ø D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59”(15 mm)
B	26		1.024		
Ø C	2.95	3.05	0.116	0.120	
Ø D	0.76	0.86	0.029	0.034	
E		1.27		0.050	

Cooling method: by convection (method A)
Marking: type number
Weight: 0.4g

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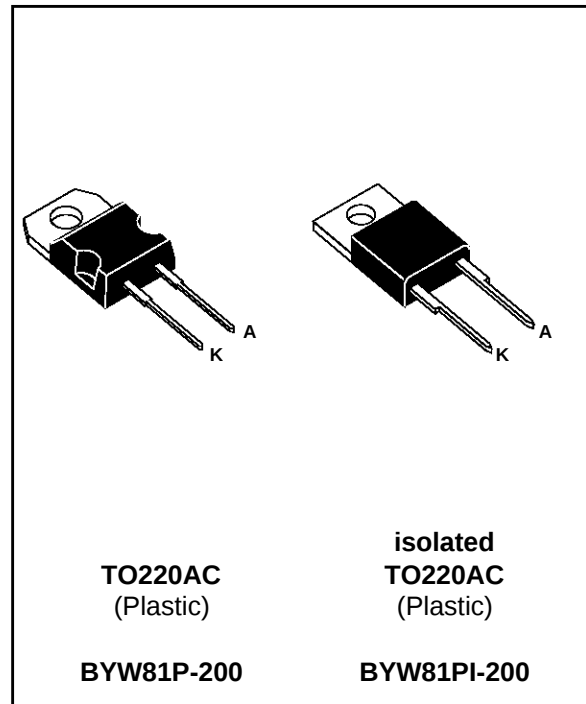
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION :
Insulating voltage = 2500 V_{RMS}
Capacitance = 7 pF

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{F(RMS)}$	RMS forward current			35	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	BYW81P	$T_c = 115^\circ\text{C}$	15	A
		BYW81PI	$T_c = 90^\circ\text{C}$	15	
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ms}$ sinusoidal	200	A
T_{stg} T_j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	BYW81P-/PI-				Unit
		50	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

BYW81P/PI

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	BYW81P	2.0	°C/W
		BYW81PI	3.5	

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _{RRM}			20	μA
	T _j = 100°C				1.5	mA
V _F **	T _j = 125°C	I _F = 12 A			0.85	V
	T _j = 125°C	I _F = 25 A			1.05	
	T _j = 25°C	I _F = 25 A			1.15	

Pulse test : * tp = 5 ms, duty cycle < 2 %

** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.016 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A			25	ns
		I _F = 1A V _R = 30V			40	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F		15		ns
V _{FP}	T _j = 25°C	I _F = 1A		2		V

Fig.1 : Average forward power dissipation versus average forward current.

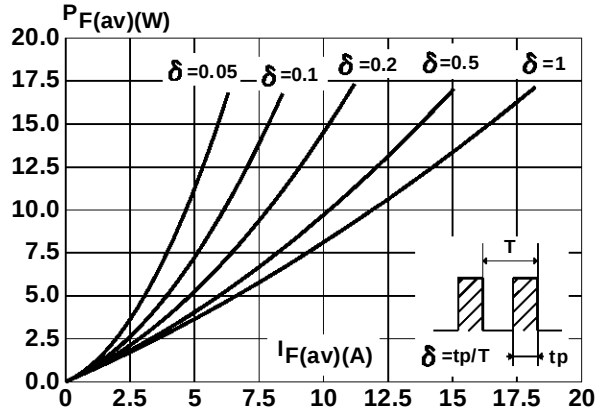


Fig.2 : Peak current versus form factor.

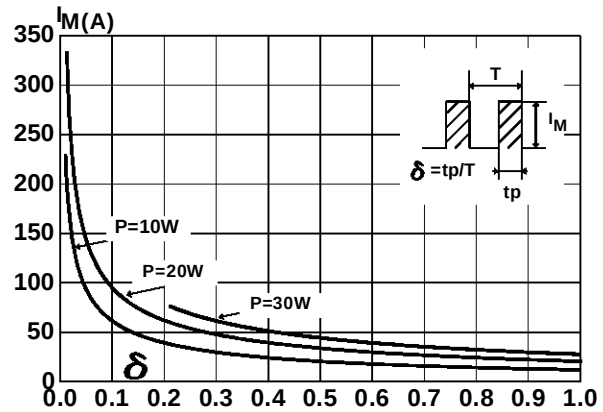


Fig.3 : Forward voltage drop versus forward current (maximum values).

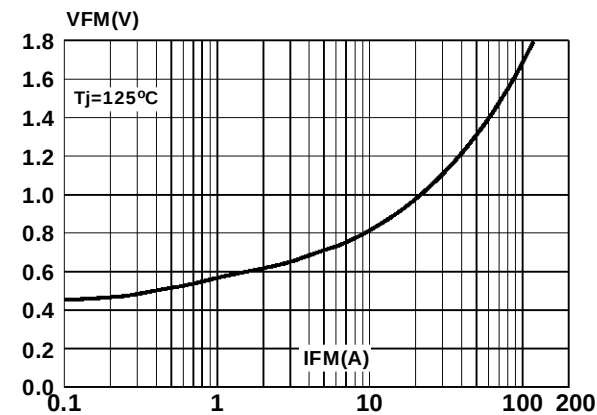


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

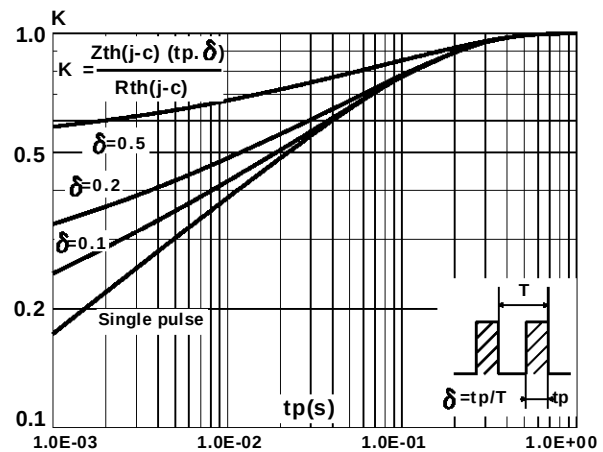


Fig.5 : Non repetitive surge peak forward current versus overload duration. (BYW81P)

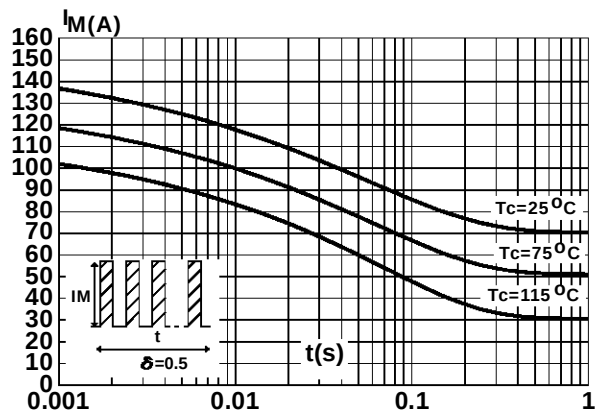


Fig.6 : Non repetitive surge peak forward current versus overload duration. (BYW81PI)

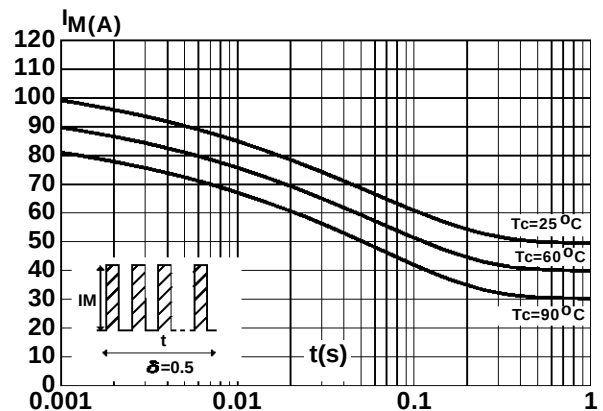


Fig.7 : Average current versus ambient temperature.
(duty cycle : 0.5) (BYW81P)

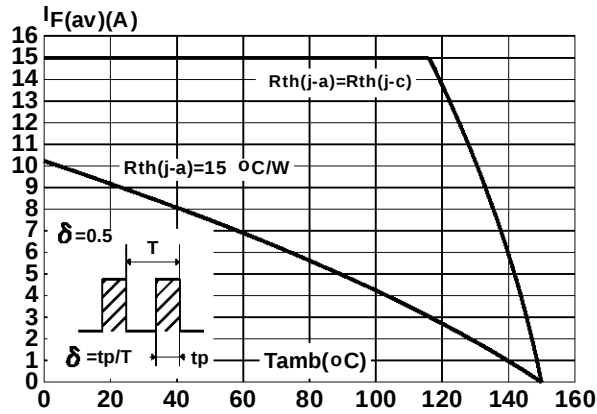


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (BYW81PI)

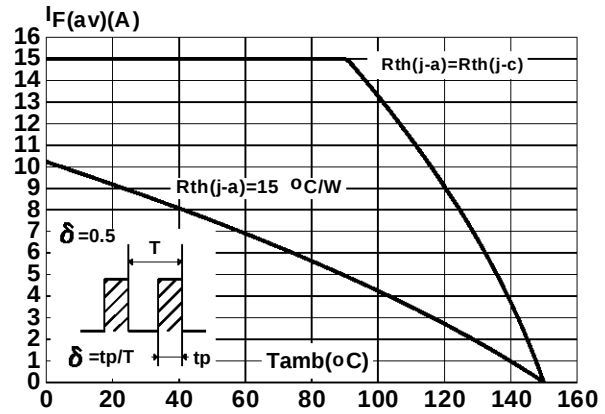


Fig.9 : Junction capacitance versus reverse voltage applied (Typical values).

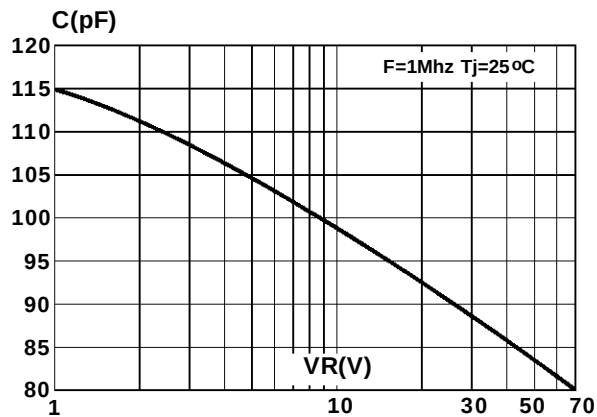


Fig.10 : Recovery charges versus dI_F/dt .

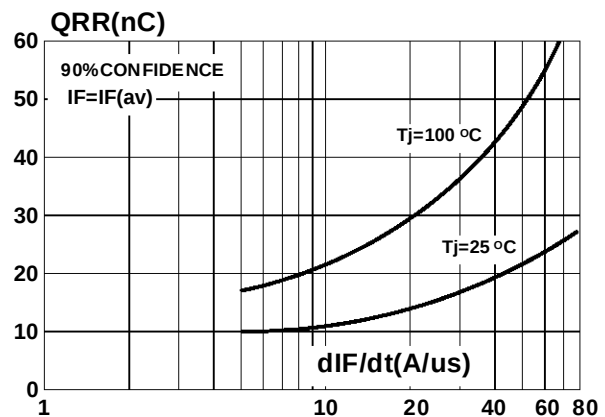


Fig.11 : Peak reverse current versus dI_F/dt .

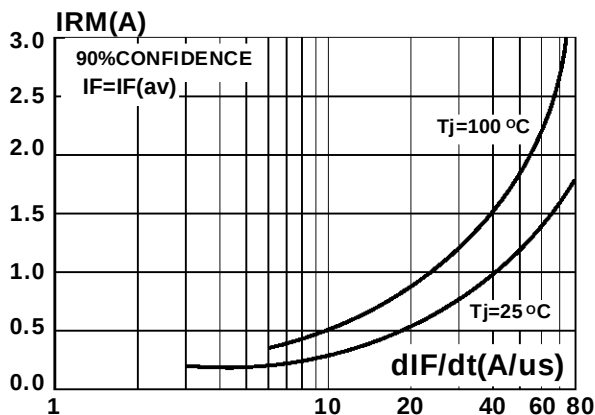
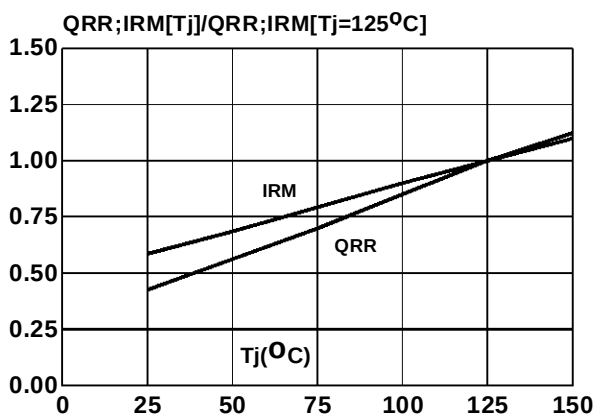
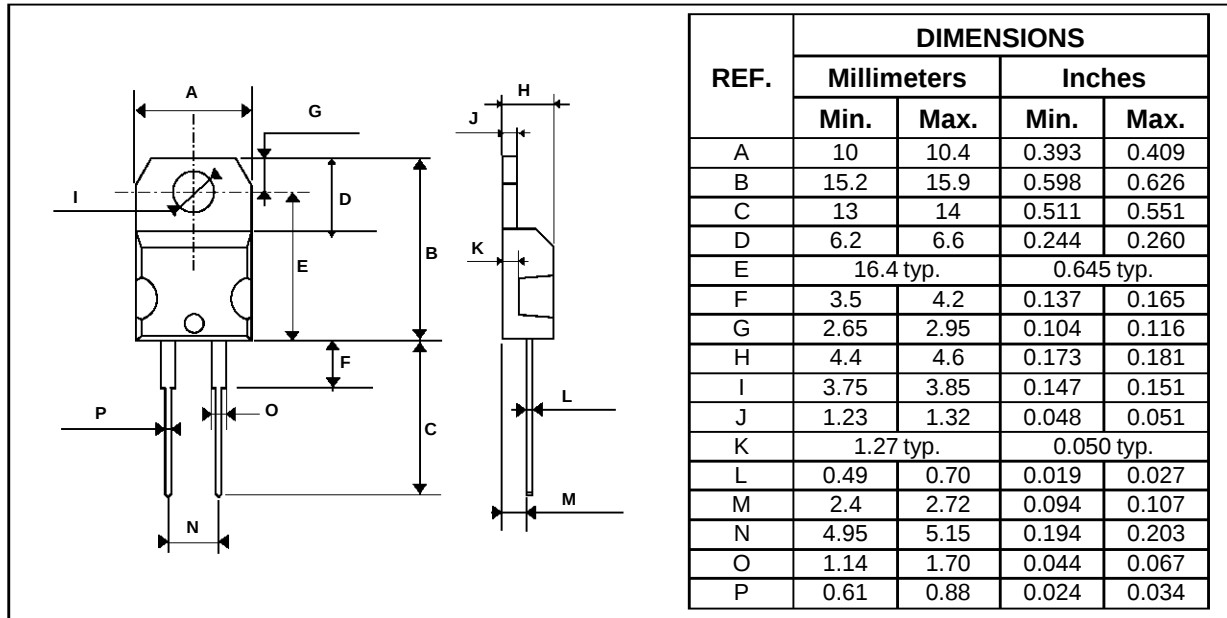


Fig.12 : Dynamic parameters versus junction temperature.

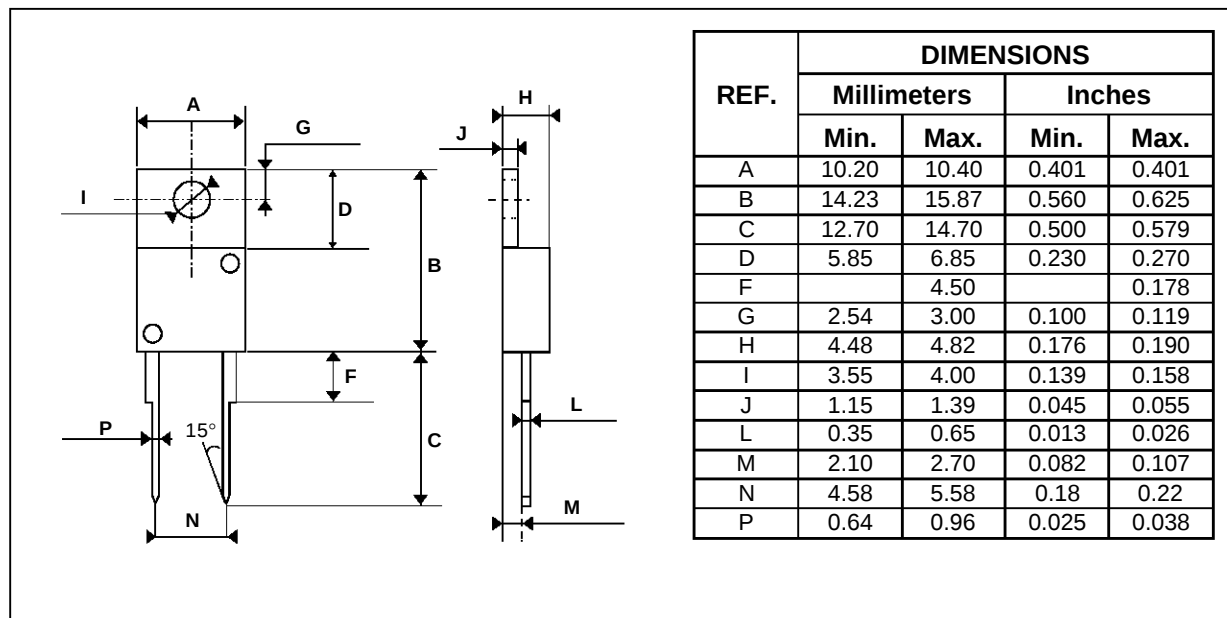


PACKAGE MECHANICAL DATA
TO220AC (JEDEC outline)



Cooling method : C
Marking : Type number
Weight : 1.9 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA
TO220AC (isoluted)



Cooling method : C
Marking : Type number
Weight : 2.2 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

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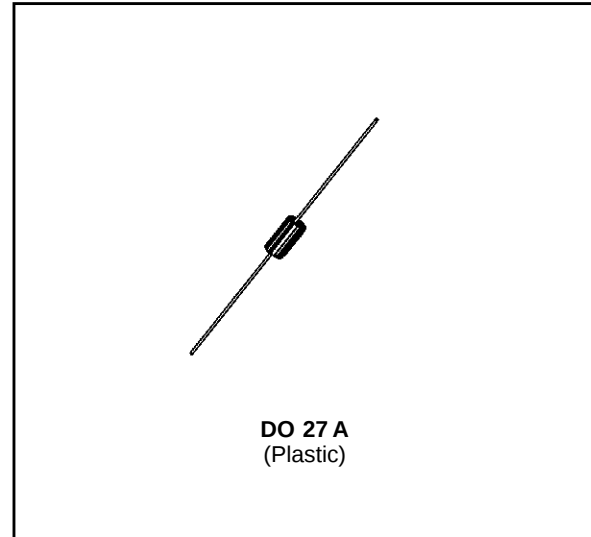
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HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIMES
- HIGH SURGE CURRENT
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF t_{rr} AND I_{RM} AT 100°C UNDER USERS CONDITIONS



DESCRIPTION

Low voltage drop and rectifier suited for switching mode base drive and transistor circuits.

ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	70	A
$I_F (AV)$	Average Forward Current*	$T_a = 85^\circ C$ $\delta = 0.5$	3	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	70	A
P_{tot}	Power Dissipation *	$T_a = 85^\circ C$	2.5	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C
T_L	Maximum Lead Temperature for Soldering during 10s at 4mm from Case		230	°C

Symbol	Parameter	BYW 98-				Unit
		50	100	150	200	
V_{RRM}	Repetitive Peak Reverse Voltage	50	100	150	200	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	55	110	165	220	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient*	25	°C/W

* On infinite heatsink with 10mm lead length.

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			10	μA
	$T_J = 100^\circ\text{C}$				0.5	mA
V_F	$T_J = 25^\circ\text{C}$	$I_F = 9\text{A}$			1.1	V
	$T_J = 100^\circ\text{C}$	$I_F = 3\text{A}$			0.85	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_J = 25^\circ\text{C}$ $V_R = 30\text{V}$	$I_F = 1\text{A}$ See figure 10	$di_F/dt = -50\text{A}/\mu\text{s}$			35	ns
Q_{rr}	$T_J = 25^\circ\text{C}$ $V_R \leq 30\text{V}$	$I_F = 2\text{A}$	$di_F/dt = -20\text{A}/\mu\text{s}$		12		nC
t_{fr}	$T_J = 25^\circ\text{C}$ Measured at $1.1 \times V_F$	$I_F = 1\text{A}$	$t_r = 10\text{ns}$		20		ns
V_{FP}	$T_J = 25^\circ\text{C}$	$I_F = 1\text{A}$	$t_r = 10\text{ns}$		5		V

To evaluate the conduction losses use the following equations:

$$V_F = 0.66 + 0.03 I_F$$

$$P = 0.06 \times I_{F(AV)} + 0.03 I_{F(RMS)}^2$$

Figure 1. Maximum average power dissipation versus average forward current.

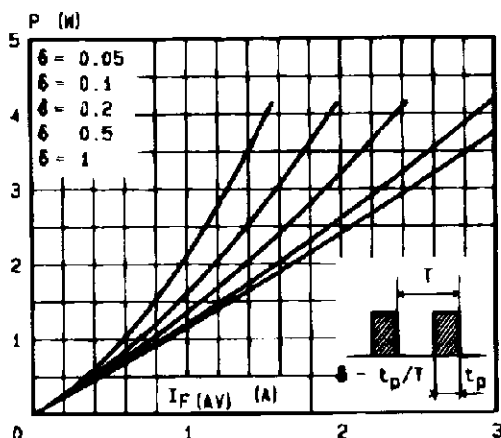


Figure 2. Average forward current versus ambient temperature.

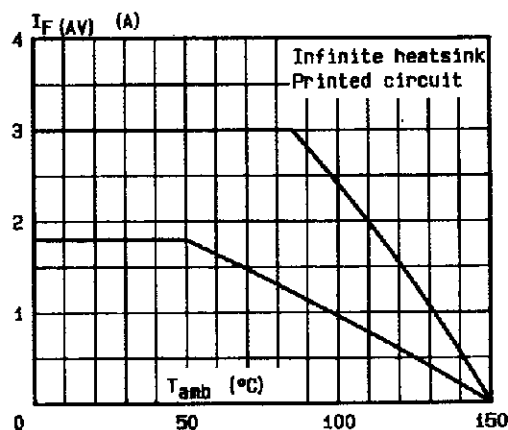


Figure 3. Thermal resistance versus lead length.

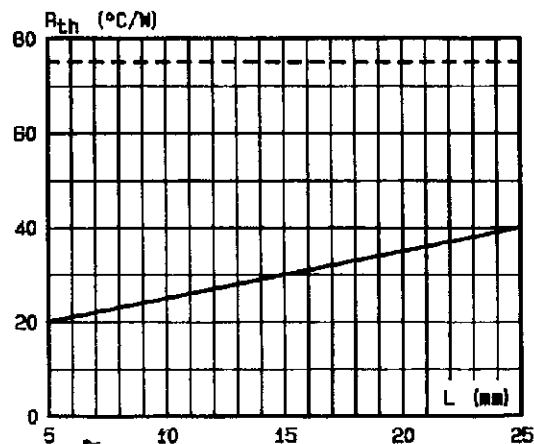
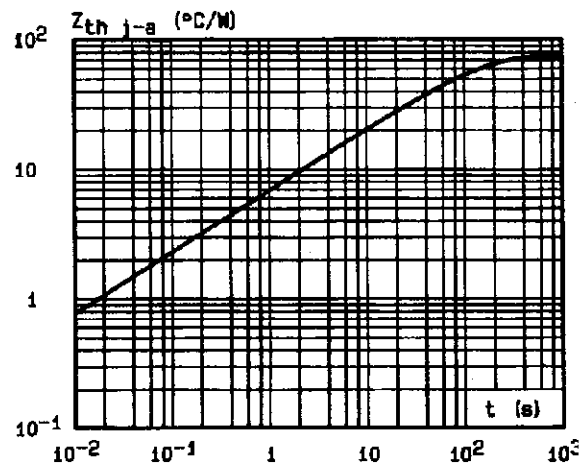


Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).


 Mounting n°1
INFINITE HEATSINK

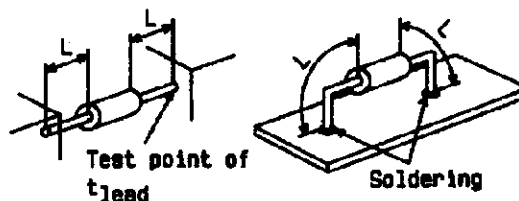
 Mounting n°2
PRINTED CIRCUIT


Figure 5. Peak forward current versus peak forward voltage drop (maximum values).

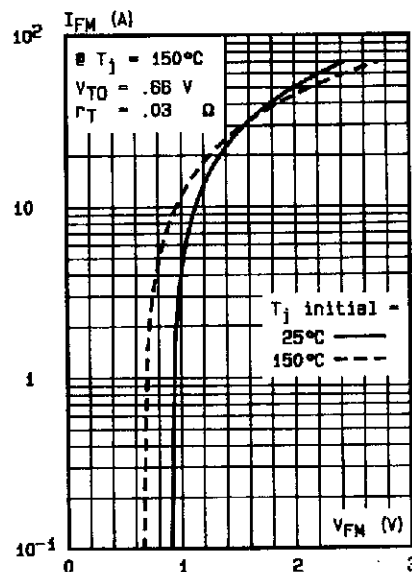


Figure 6. Capacitance versus reverse voltage applied.

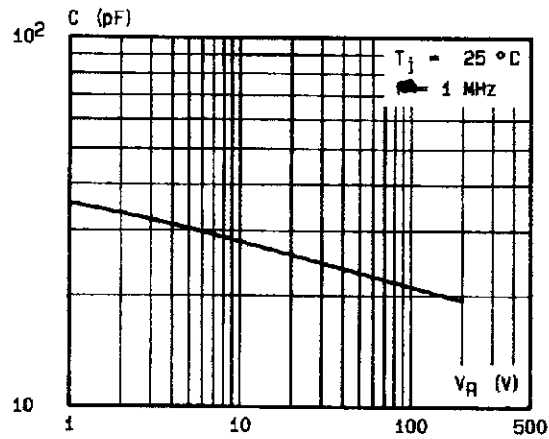


Figure 7. Recovery time versus di_F/dt .

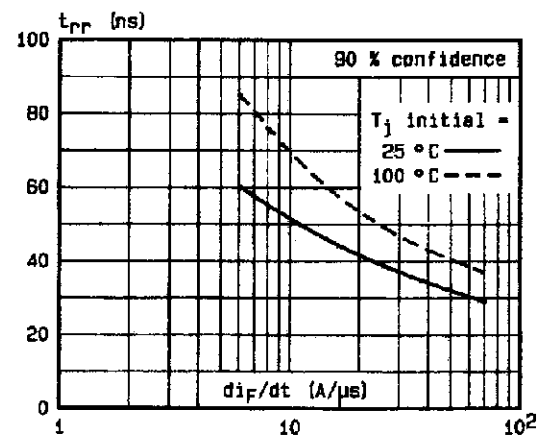


Figure 8. Peak reverse current versus di_F/dt .

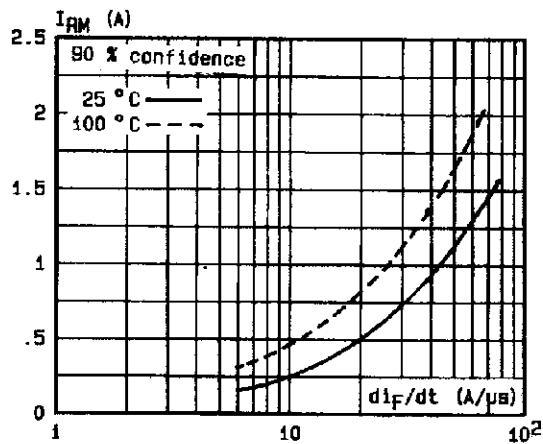


Figure 9. Dynamic parameters versus junction temperature.

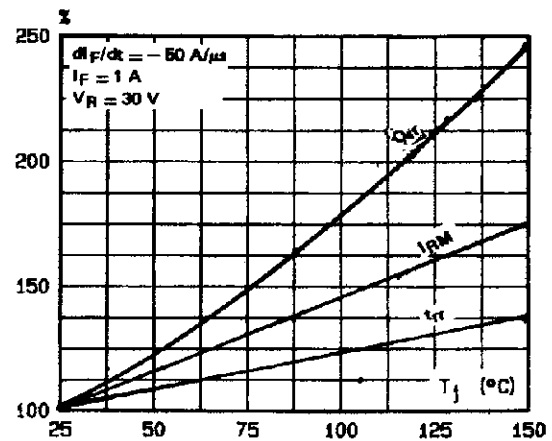
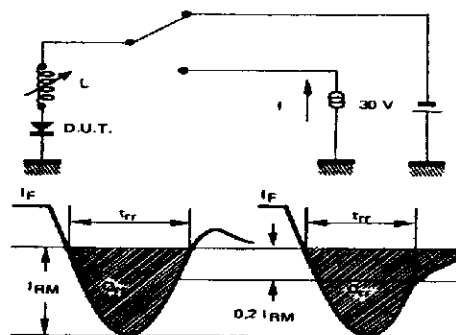
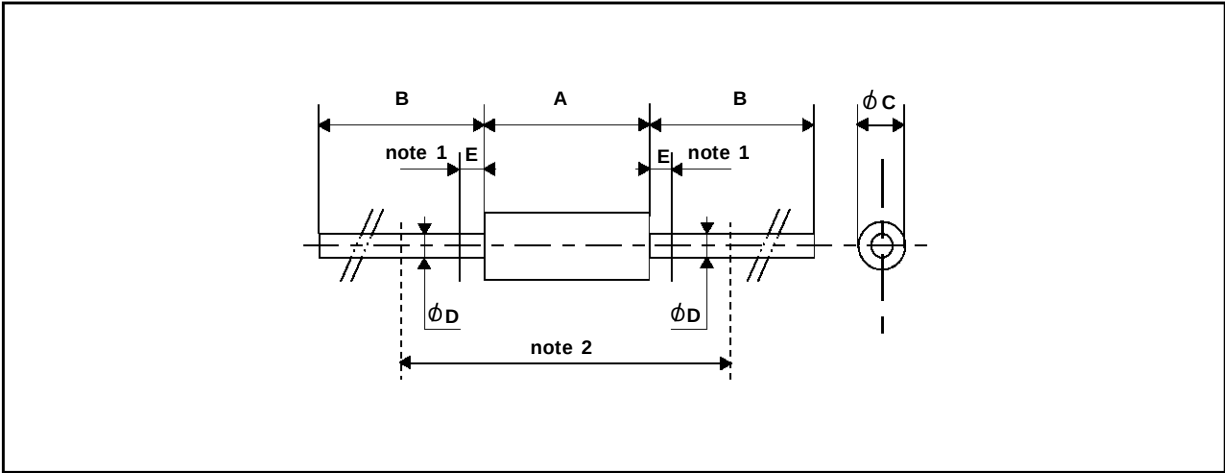


Figure 10. Measurement of t_{rr} (Fig. 7) and I_{RM} (Fig. 8).



PACKAGE MECHANICAL DATA

DO 27A (Plastic)



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.80		0.385	1 - The lead diameter Ø D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59"(15 mm)
B	26		1.024		
Ø C		5.10		0.200	
Ø D		1.28		0.050	
E		1.25		0.049	

Cooling method: by convection (method A)
 Marking: type number; white band indicates cathode
 Weight: 1g

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HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

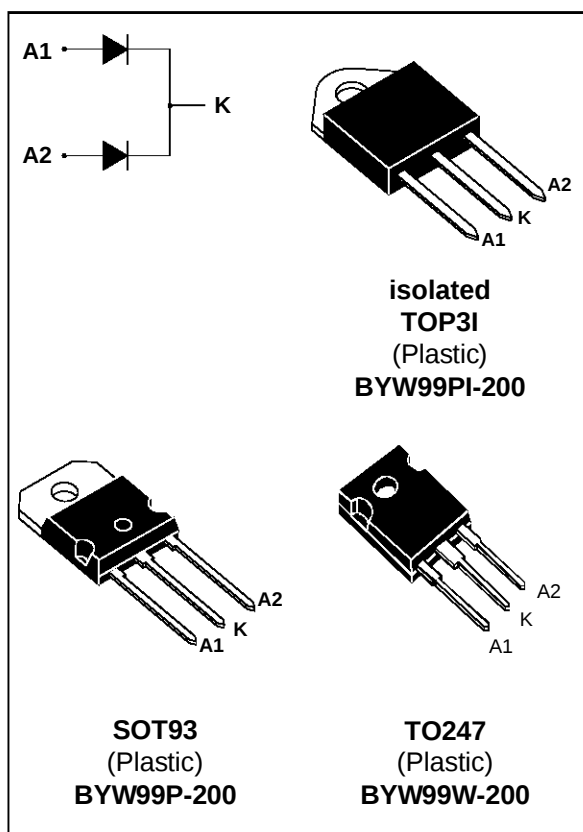
- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION TOP3I :
 Insulating voltage = 2500 V DC
 Capacitance = 12 pF

PRELIMINARY DATASHEET

DESCRIPTION

Dual center tap rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in SOT93, TOP3I or TO247 this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{F(RMS)}$	RMS forward current		Per diode	35	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SOT93 / TO247	$T_c = 120^\circ\text{C}$ Per diode	15	A
		TOP3I	$T_c = 115^\circ\text{C}$ Per diode	15	
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ms}$ sinusoidal Per diode	200	A
T_{stg} T_j	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	BYW99P-/PI-/W-				Unit
		50	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

BYW99P/PI/W**THERMAL RESISTANCE**

Symbol	Parameter			Value	Unit
Rth (j-c)	Junction to case	SOT93 / TO247	Per diode	1.8	°C/W
			Total	1.0	
		TOP3I	Per diode	2.0	
			Total	1.25	
Rth (c)	Coupling	SOT93 / TO247		0.2	°C/W
		TOP3I		0.5	

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{th}(j-c) (\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	μA
	$T_j = 100^\circ\text{C}$				1.5	mA
V_F **	$T_j = 125^\circ\text{C}$	$I_F = 12 \text{ A}$			0.85	V
	$T_j = 125^\circ\text{C}$	$I_F = 25 \text{ A}$			1.05	
	$T_j = 25^\circ\text{C}$	$I_F = 25 \text{ A}$			1.15	

Pulse test : * $t_p = 5 \text{ ms}$, duty cycle < 2 %

** $t_p = 380 \mu\text{s}$, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.016 \times I_F^2 (RMS)$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{A}$ $I_{rr} = 0.25\text{A}$ $I_R = 1\text{A}$			25	ns
		$I_F = 1\text{A}$ $dI_F/dt = -50\text{A}/\mu\text{s}$ $V_R = 30\text{V}$			40	
tfr	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$ $tr = 10 \text{ ns}$ $V_{FR} = 1.1 \times V_F$		15		ns
V_{FP}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$ $tr = 10 \text{ ns}$		2		V

Fig.1 : Average forward power dissipation versus average forward current.

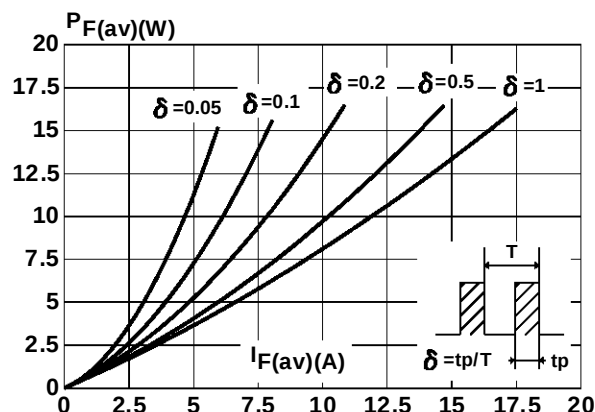


Fig.2 : Peak current versus form factor.

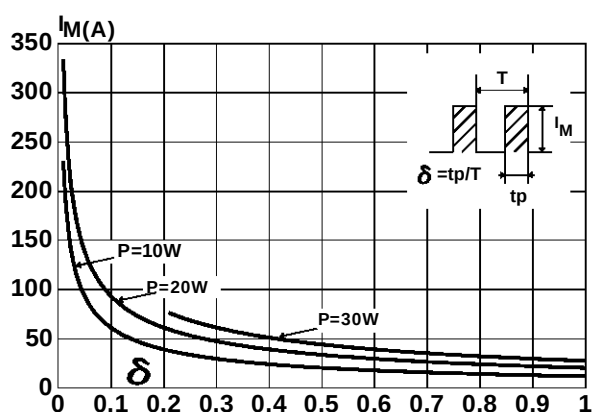


Fig.3 : Forward voltage drop versus forward current (maximum values).

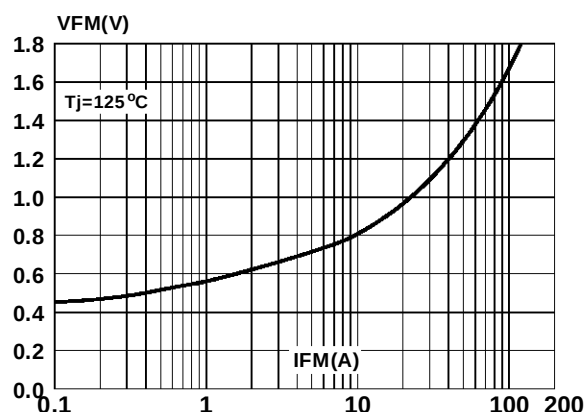


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

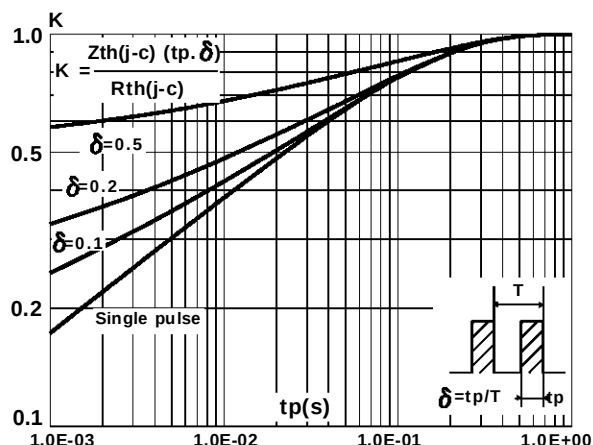


Fig.5 : Non repetitive surge peak forward current versus overload duration. (SOT93, TO247)

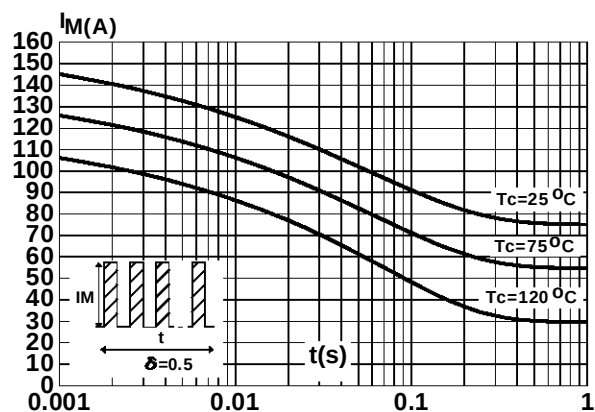


Fig.6 : Non repetitive surge peak forward current versus overload duration. (TOP31)

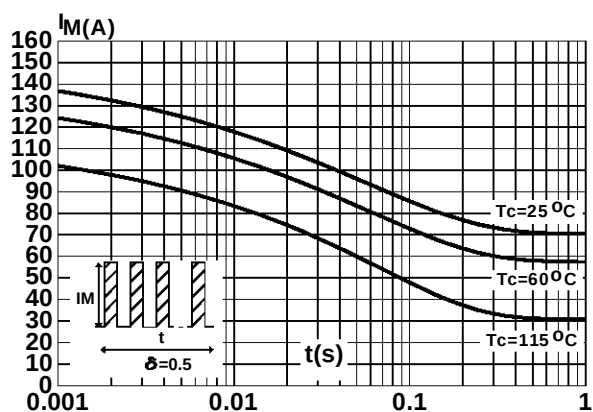


Fig.7 : Average current versus ambient temperature.
(duty cycle : 0.5) (SOT93, TO247)

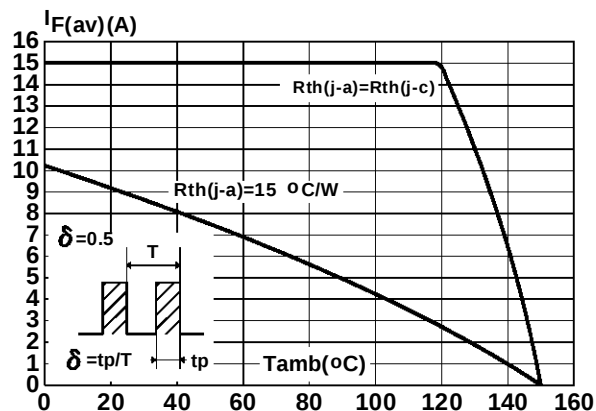


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TOP3I)

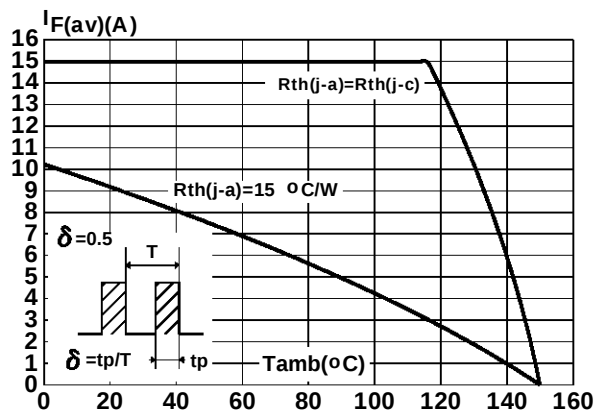


Fig.9 : Junction capacitance versus reverse voltage applied (Typical values).

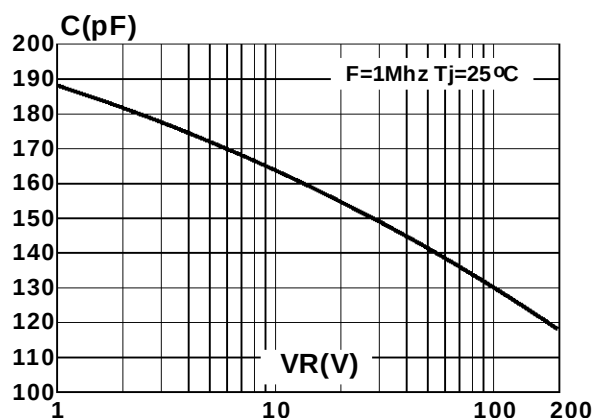


Fig.10 : Recovery charges versus dI_F/dt .

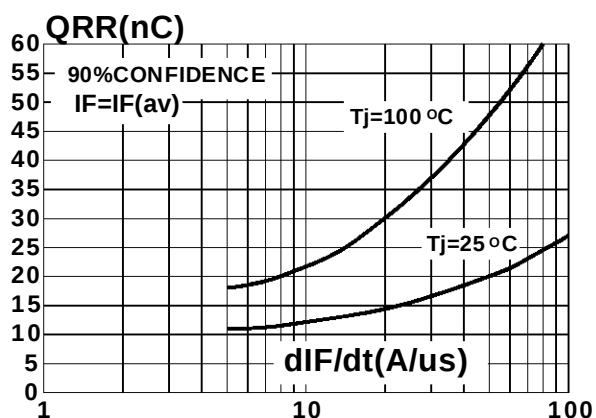


Fig.11 : Peak reverse current versus dI_F/dt .

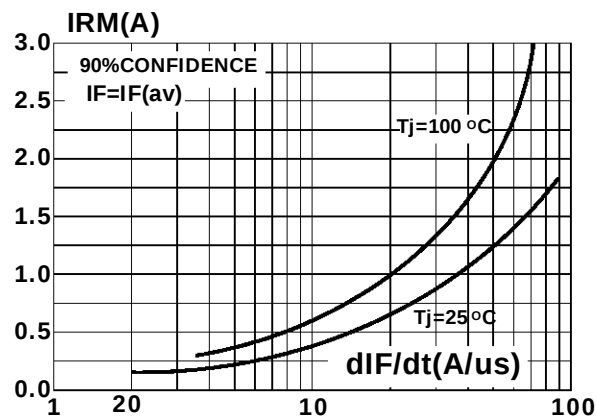
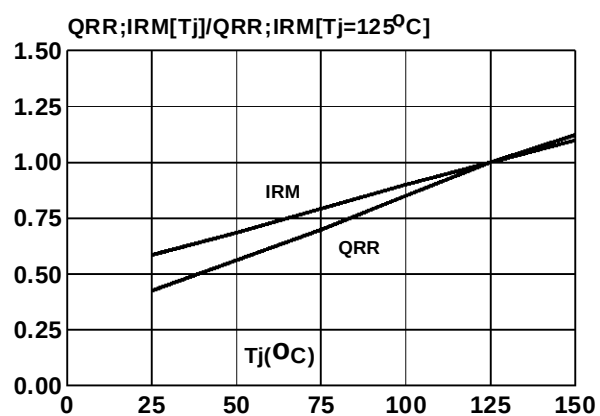


Fig.12 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

SOT93

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.7	15.2	0.578	0.596
B		16.2		0.637
C	31 typ		1.220 typ	
D	18 typ		0.708 typ	
E		12.2		0.480
G	3.95	4.15	0.155	0.163
H	4.7	4.9	0.185	0.193
I	4	4.1	0.157	0.161
J	1.9	2.1	0.062	0.075
L	0.5	0.78	0.019	0.030
M	2.5 typ		0.098 typ	
N	10.8	11.1	0.425	0.437
P	1.1	1.3	0.043	0.051

Cooling method : C

Marking : Type number

Weight : 5.3 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA

TOP3I (isolated)

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	15.10	15.50	0.594	0.611
B	20.70	21.10	0.814	0.831
C	14.30	15.60	0.561	0.615
D	16.10	16.50	0.632	0.650
G	3.40	-	0.133	-
H	4.40	4.60	0.173	0.182
I	4.08	4.17	0.161	0.164
J	1.45	1.55	0.057	0.062
L	0.50	0.70	0.019	0.028
M	2.70	2.90	0.106	0.115
N	5.40	5.65	0.212	0.223
P	1.20	1.40	0.047	0.056

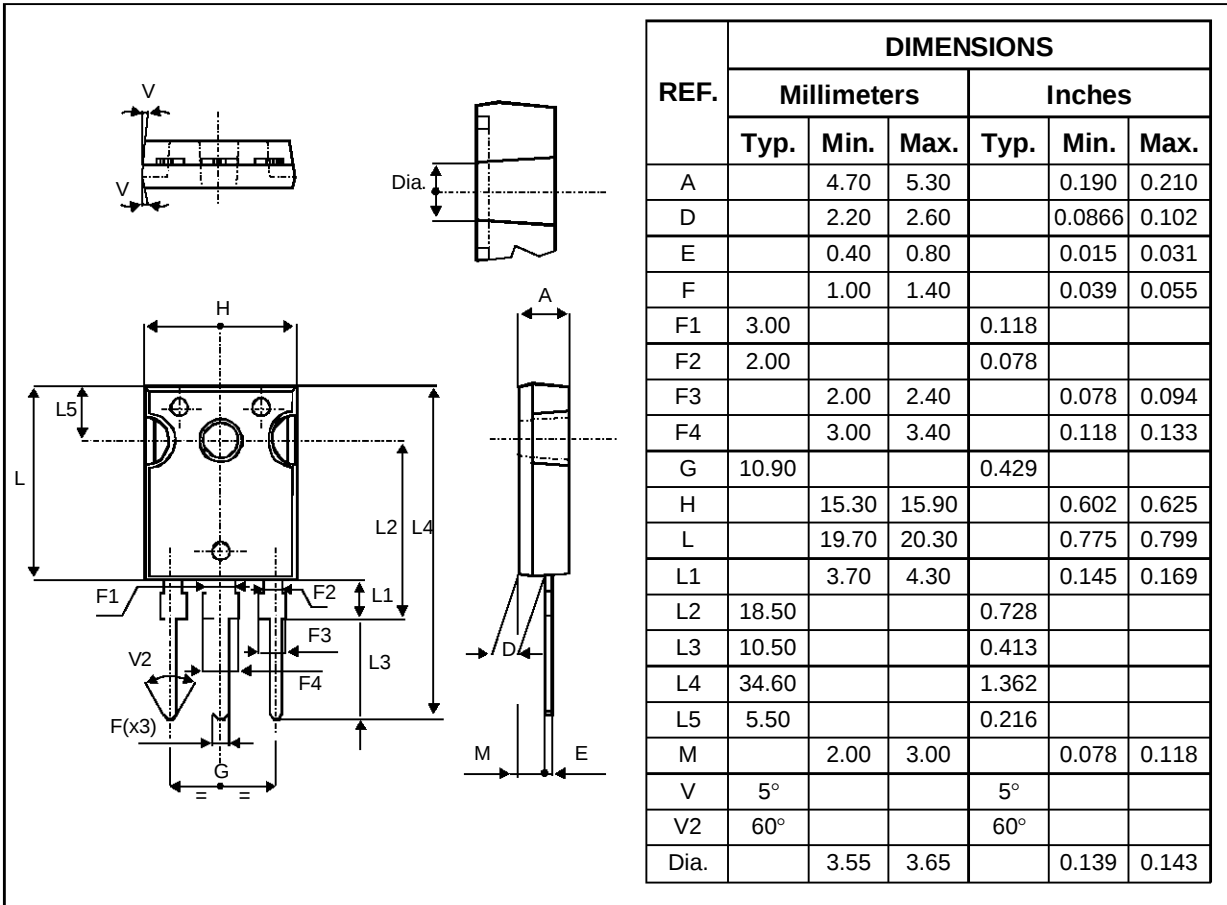
Cooling method : C

Marking : Type number

Weight : 4.7 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

BYW99P/PI/W**PACKAGE MECHANICAL DATA**
TO247

Cooling method : C
Marking : Type number
Weight : 4.4 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

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